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LANGUAGE VARIATION
IN YOUNG CHILDREN

A Thesis
Presented to the Faculty of Psychology
of
The Open University
in Candidacy for the Degree of
Master of Philosophy

Sarah B. Barnes

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ABSTRACT

LANGUAGE VARIATION IN YOUNG CHILDREN

Sarah B. Barnes

The Open University, 1984

The present research was designed to explore individual variation in young children's one-word utterances. It begins with a critical review of the research literature relating to language variation in terms firstly of sociolinguistic sources of variation and secondly of evidence for language variation from the psycholinguistic literature. Five hypotheses were developed from the literature review. These were as follows: Some children show a preference for nouns and other children a preference for pronouns at the one-word stage of development; referential and expressive speech styles will emerge based on pragmatic codings; the focus of reference is objects in referential speech and the focus of reference is people in expressive speech; referential speech most often occurs in response to adult speech; and referential speakers will use more nouns, will have a higher proportion of responses and will talk proportionally more about the object world, whereas expressive speakers will use more pronouns, will initiate conversations more often and their speech will refer more to people than to things.

The sample consisted of 32 children drawn from the Bristol Language Development Project. An analysis was made of all one-word utterances produced on three separate occasions over a six month

period. All one-word speech was coded into systems of discourse features, pragmatic function, imitation, focus of reference. All word types were categorized by parts of speech. Percentage data was analyzed using ANOVAs, T-Tests and cluster analyses.

In general, the results supported the hypotheses. However, the support was not always as clear-cut as had been hoped. The results were then discussed in terms of their relevance to the study of language variation.

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Introduction

Variation in language may be described in many ways and certainly comes in many forms. This thesis is concerned with one particular aspect of language variation: how children vary in the way they actually acquire language. Are there different ways in which children learn language; and, if so, are there specific features which distinguish these different language learning strategies?

Three types of variation will be explored in this thesis: those that lie within the child's external environment; those that are internal within the child's own psychological nature; and those that are interactional. All three types of variation examined are relevant to the explanation of the sources of variation in young children's early language.

Differences in sociolinguistic sources of variation, including target languages, dialectal differences in English, social class, sex, and position in family, may predict the language the young child acquires or uses. The common thread linking these sources is that they are environmental in nature. That is, they are outside the child.

Psycholinguistic sources are thought to be within the child.

Psycholinguistic variation is concerned with the actual production of speech. Variation in the use of syntactic structures, semantic relations, pragmatic intentions or phonological structures are examples of psycholinguistic variation.

The third type of variation to be discussed concerns the identification of children who seem to concentrate their early

language skills to learn to use language for different ends. Some researchers have noted that some children seem to be most interested in acquiring language to talk about the object world, whereas other children seem most interested in using language to promote and maintain social interaction. This is explored in Chapter II.

One deficiency in the research literature on variation has been the tendency to reduce continuous dimensions of difference to simple dichotomies. In most samples of more than two subjects, the two groups of children are formed on the basis of the extremes of the continua investigated. The result is that the middle group of children come to be seen as contributing to the language features which distinguish the groups, while in reality this middle group may not be contributing at all. Another deficiency in previous work has been the small size of the samples. Obviously, researchers are under many constraints when formulating research plans. Investigations of large numbers of children are extremely expensive and time-consuming. However in order to explore variation in language use it is necessary to have a sample large enough to allow statistical techniques to be employed. As will be seen, the sample used here is large enough for some statistical work to be carried out.

This thesis is divided into four sections. Chapters I and II review the literature on variation in young children's early language. Chapter III presents the method used in the current investigation. The results of the statistical analyses are given in Chapter IV. The results are discussed in relation to previous work in the final chapter.

Chapter I

The Major Dimensions of Variation in Language Acquisition

Section 1: Sociolinguistic sources of variation.

Although variation in language use associated with membership of different social groups is not the concern of the empirical work carried out in the present investigation, a brief review of work in this area will be presented here in order to set the present study in a wider context.

This current investigation is concerned with young children's acquisition of English. Research involving comparisons between a number of linguistic communities is however also referred to as it provides much useful information as to where to look for variation; whether any variation found is limited to English, or whether individuals acquiring other languages vary in the same ways.

Evidence of dialectal differences in English also provides information about where to look for differences among groups of children; dialectal groups do arise within areas as small as neighborhoods and therefore it is possible to define language groups in this way.

The sociolinguistic issues of social class, sex differences and position in the family will also be reviewed as possible sources of individual differences in young children's acquisition of language.

Cross-Linguistics Comparisons.

Research across languages has focussed on describing similarities and differences in how children learn to talk. The impetus for such research has been to validate or disprove Chomsky's theory of a universal process of language acquisition. The theory, put forward by Chomsky (1965), postulates that the task of acquiring language can partially be accounted for by transformational grammar; the child must be endowed with an innate predisposition which allows him to process language. If an innate view is accepted as being able to account for language acquisition then such a position also suggests that all individuals have the same innate endowment; therefore the language learning task must be universal. Results support both sides of the question.

A caution regarding cross-language research must be made. Cross-language comparisons, in many instances, also involve cross-cultural comparisons, which may radically alter the picture. For example, children in western cultures are, most often, cared for by their mother. She sees to the child's physical needs and is often the one who interacts most with the child. One assumes then that the mother has a primary role in the child's language development. However in other cultures, for example in Samoa, the mother has primary care-taking responsibilities only in the beginning of the first year of the child's life (Ochs, 1983). After that, primary caretaking falls on older siblings. In the Samoan culture age equals status. Mothers have a much higher status than children. Therefore, older children provide much of the caretaking for the younger child. As Ochs has pointed out, in western cultures the usual verbal interaction with the young child

is ABAB. That is, an adult, usually the mother, and the child take alternate turns in speaking. However, in Samoa, conversations with the young child are often ABCABC. That is the child speaks, the mother then speaks to an older child, and then the older child speaks to the younger child. The conclusion, therefore, is that the speech addressed to the child who is learning language differs in Samoa from that addressed to the language learning child in western society. This type of cultural difference could affect the process of learning language. The language model presented to the language learning child in Samoa by an older sibling could be a less mature model than the adult model presented to young children in western society. Further, since the conversational skills needed in ABCABC types are more complex than skills needed in ABAB types, this might alter the acquisition process as well.

The evidence for language universals can be seen most clearly if one examines the acquisition process across languages which are dissimilar. The most notable evidence concerns word order. In a number of languages, such as English, French, German and Hebrew, the subject-verb-object construction is standard. Young children learning these languages seem to use the same rudimentary forms in the course of developing proficiency in the construction. That is, children go through a stage of using the forms subject-object, subject-verb, or verb-object. Young children, however, do not use object-subject or verb-subject constructions (Slobin, 1982). Not only are the syntactic forms similar, but the semantic relations expressed by such utterances are also similar. For example, Slobin (1973) reports that the semantic relation, verb-object, emerges as the first semantic relation in English, where it is marked by word order; and also in Finnish, Latvian, Russian and Luo, where it is marked by inflection. This suggests that the concepts underlying

such constructions are similar.

Slobin reviews much of the evidence on language universals. One of the consistent features which emerges is that languages from different language families have characteristics which make them similar to other languages. Children initially negate utterances by inserting a single element into a simple sentence, regardless of the correct form of negation in the target language. Again, in languages which on the surface would appear unrelated, early questions are formed by using a rising intonation. However in some languages such as Finnish, where rising intonation is not used by adults, children's questions appear later than in other cultures (Bowerman, 1973).

Some evidence for individual differences comes when the adult models are dissimilar. Obviously, phonological and syntactic forms change from language to language. While some languages may use a relatively simple construction to encode a particular semantic category, other languages use more complex constructions. For example, negation, in many languages including English and German, may be achieved with the inclusion of one additional element: "not" or "nicht". However in other languages, such as French, properly negated utterances require the inclusion of two elements: the "ne-pas" construction surrounding the main verb.

Finally, there are differences in the acquisition of locative relations. Constructions which relate objects in space are obviously important for the young child as he learns to manipulate objects. In Serbo-Croatian the construction of a locative relation is complex and young children tend to acquire these forms later than children learning languages where the construction is simpler.

A young bilingual child learning Serbo-Croatian and Hungarian mastered locative relations in Hungarian before reaching the same level of competence in Serbo-Croatian (Slobin, 1973). However, there can be no question that this child had the underlying semantic concepts.

This raises a difficulty as to how to determine the relationship between cognition and language. More specifically it makes apparent the difficulty in comparing the acquisition of syntactic constructions without examining the underlying semantics. Cromer summarized the literature and stated that "language could never be learned unless the meanings were obvious to the child when he heard the sentences expressing them. In other words, the child cannot discover syntactic structures without the aid of meaning" (1979, p. 106).

It is important to note that the same results are used as evidence for both universal patterns and for individual differences. As noted above, evidence for language universals comes from languages that form a construction in the same way as each other. The counter-evidence comes when a language uses a different construction. Is it enough to say that in languages which are similar there is a universal order of development? Unfortunately, no two languages could match on all constructions without losing the differences which inevitably exist between languages.

The discussion must turn away from differences between languages to differences within one language. In many respects dialects of English are as different as the many languages mentioned above. Whether the acquisition of any one dialect is different from the acquisition of any other dialect may be as difficult to decide as

the question of differences between languages.

Dialectal Comparisons.

Differences exist among the dialects of a language. Geographical factors have been the most important influence on the differentiation of dialects. Regional dialects differ between areas as large as countries (British English versus American English, versus Canadian English and Australian English (see Quirk, 1968)), or as small as city districts. New York has five distinct regional dialects (Labov, 1966). Dialects are often linked to social and/or ethnic groups and vary considerably as to how similar or dissimilar they are to the 'standard' language. In Bristol a working class dialect in one section of the city differs from the dialect of the middle class area of the city. Standard English usually refers to written language; when it refers to speech Standard English is the language closest to the written form. In and of itself a non-standard accent is not a mark of a different dialect. However, accents are often an attribute of a dialect. Having an American accent does not make one a speaker of the American dialect. However, taken in conjunction with all the characteristics of that dialect, the accent is probably the one feature which (most obviously) stands out.

Much of the research on English dialects has centered on differences between American Black English vernacular (BEV) and Standard English (SE) (see Edwards, 1976). Labov's (1970) investigation has described differences between BEV and SE in their uses of the copula form and in the realization of negation. BEV speakers typically use the infinitive forms 'be' and 'do' rather than 'am, are, is, does' e.g., "I be going to work". BEV is also

typified by a double negative construction, as in "Nobody never...," or "She didn't know nothing," or even a triple negative, "It don't mean nothing to nobody" (meaning it doesn't mean anything to anybody).

Other differences between BEV and SE include the use of contraction in BEV question formation: "Dey come yet?" (meaning have they come yet?), "Where he' dey gone?" (meaning where have they gone?). Some phonological transformations appear unrelated to accent because they appear throughout the country. For example, the transformation of 'th' to 'd' in frontal position: dat for that; dey for they; dese for these. In final position the 'th' is transformed to 'f' (wif for with); or dropping the final consonants as in "Fu' spee' 'hea' " (meaning full speed ahead). However, just as there is not one dialect among white English speakers, so there is not one form of BEV (Labov, 1966; Stewart, 1969).

Williamson (1972) noted some typical BEV constructions in non-black populations, such as double negatives and the use of pronouns. There is similar evidence in England.

In Bristol, one commonly hears a 'th' to 'f' phonological transformation as in "brofer" - brother, "free" - three; the addition of 'l' to words ending in a vowel, "ideal" - idea, Chew "Magnal" - Chew Magna; the addition of a non-word as in, "He finks he's a gert mass signtist, he does" (meaning he thinks he is a great scientist, he does; "mass" is common among school children from the Bedminster area of Bristol and appears to be used for emphasis). Prepositions are often used in a non-standard way or left out altogether: "We went down Bedminster", "I went up his house". Non-standard subject-verb agreement is found "He says to

I, and I says to he", "We was going out". There are examples of non-standard use of possessive pronouns throughout England, such as "And I says to our Nigel", "Our dad and our mum". There is also non-standard past-participle use in Bristol, for example, "I was led on the ground" (I was lying), "I was sat on the bench" (I was sitting), "I was stood on the busstop" (I was standing at).

One would expect, therefore, to find differences in acquisition orders among children acquiring different dialects of the same language. If BEV speakers use the proforms 'be' and 'do' then young BEV speakers might master this auxiliary type construction earlier than children learning 'is,' 'are' and 'does'. On the other hand, one might expect SE speakers to acquire use of the negation earlier than BEV speakers because of the difficulty in mastering the double or triple negative constructions. Within Bristol, one might expect young children in certain areas to show an earlier use of possessive pronouns because of their overuse in the adult model.

Unfortunately the exploration of dialectal differences in acquisition processes is beyond the scope of this study. To date little work has been carried out on the acquisition processes among different dialects, although, Wells (1979) reported differences among Bristol dialects when a sub-set of his data was analyzed.

Social Class Variation.

The issue of differences between social class groups is not only complex, it is also controversial. It is complex because the method of measuring class may well affect the results. Procedures to measure class vary from objective to almost totally subjective. An objective measure, such as parental income, holds the assumption

that the higher the income the higher the social class. A subjective measure might be one where class is based on interviews with shop-keepers. Most measures today are a mixture. For example, the Registrar General's classification of occupations takes assumed income and assumed educational training into account. If one includes information from only one parent then the contribution of the other parent is ignored. Often the occupation of the main 'bread-winner' is the one assessed. This technique may be employed because the types of jobs that many women hold do not reflect their capabilities or desires but rather are an indication that many women work only part-time so as to be at home with their children.

Social class is a controversial issue because class is often equated with race and therefore it is sometimes used to promote discrimination. For example, it is easy to imagine a residential community which would not want to encourage a minority group to move into the neighborhood because it would be feared that the educational level of the schools would drop, housing prices decline and vandalism increase. When class is equated with race, researchers unintentionally create controversy by discussing the abilities of one race compared with another.

In this following section social class differences in language use will be discussed. The goal will be to suggest that much of the work done has been rather dubious due to methodological ambiguities, as well as because of issues such as those raised above.

It is true that, as a group, lower class children perform less well at school than their middle class peers (McCarthy, 1954).

This suggests two things: firstly, that differences between classes

exist; and secondly, if it is thought important to diminish the differences, it is first necessary to understand the underlying causes. It has been assumed that, if differences exist between social class groups in school performance, then differences in the children's language might be one contributing factor. [Obviously, there are many contributing factors to help explain class differences in school, such as possible cognitive differences, home environments, schooling techniques, motivation, and so on. However, since this dissertation is concerned solely with variation in language use, other sources of variation will not be explored].

The prevailing view for many years was that the middle and upper social class groups were well advanced above their lower class peers on a variety of language measures. One psychologist wrote: "There is abundant evidence in the literature (Davis, Day, McCarthy, Young) to show that children from the upper socioeconomic groups are more advanced in all aspects of language development" (McCarthy, 1954). Today, however, researchers are less apt to assume class differences. Children behave differently depending on the person talking to them. In an oft-cited study, Labov (1970) showed that black children barely produced any speech if the experimenter was white; the children produced much more speech if the experimenter was black. In a separate study, there were differences in the black children's language depending on the style of language addressed to them. In the first task a black adult was to elicit natural conversation from a black child. In this instance the adult used 'standard' procedures in asking the boy about his friends, hobbies, school activities. The child produced mostly one word responses. In the second instance, the adult brought a friend of the child's with him and also produced a pack of crisps. This time the adult began by asking a question in the

local slang dialect. Both boys began talking naturally and lengthily (Labov, 1970). The early studies of child language were carried out by white academic researchers. It is perhaps due to the type of experimenter bias described above that early studies of child language found significant differences between the classes.

Templin (1957) set out to describe the development of four categories of language: "[the] articulation of speech sounds, speech sound discrimination, sentence structure, and vocabulary" (1957, p. 6). She also wanted "to investigate the inter-relationships of these aspects of language" (1957, p. 6). 480 white American children aged 3-8 years participated in the study. The children were equally divided by sex; and socioeconomic groups were designed to match the population based on the 1940 census. Data was collected during individual interviews in the children's homes. Linguistic skills were assessed by measures of their speech articulation, sound discrimination, sentence structures, and vocabulary. To obtain data for the sentence structure analyses, rapport was created with a child and then the first 50 utterances were written down for study. The other areas under investigation were measured using tests specific to the tasks.

Social class was measured by the Minnesota Scale for Parental Occupations, thus using father's occupation only. Occupations were classified on this scale into 7 types from Professional (I) to Day Labor (VII). Children were then divided into two groups: upper social class children (USES) and lower social class children (LSES). Differences between the LSES and USES groups were found on measures of vocabulary recognition, phonological discrimination and verbal articulation. However, none of these was very great.

A longitudinal study of 338 black and white children was carried out in Oakland, California (Loban, 1963). The study investigated primary school children's language in a variety of ways, some of which were similar to those used by Templin. Class was again measured using the Minnesota Parental Occupation Scale, though this time mothers' occupations were classified as well as fathers'. Language data was collected yearly in individual interviews. The rapport the experimenter achieved with each child was arrived at not by talking about books and toys as Templin did, but by encouraging the child to talk about his friends, favorite games and favorite TV programs. On the basis of vocabulary scores and teachers' ratings, Loban divided up his sample. He weighted scores to produce a standard curve. He then used only those children that were two standard deviations from the mean. This resulted in a group of 30 children who were the most proficient and a group of 24 children who were the least proficient. The majority of his results are based on comparisons of these two groups.

A number of differences did emerge at different points during this study between the low and high social class groups. The high group had larger vocabularies, their utterances were more elaborate and more effective and the structure of their sentences was more complex than the low group. Loban found an association between those children who were proficient in oral language and those who were proficient in reading. In other words, children in the high group tended to excel in oral language ability and also tended to excel in reading. He also states that "writing ability is related to socioeconomic position" (p. 85). Again, Loban found that members of the high social class group had higher levels of writing ability than the low social class group.

While studies of school-age children provide us with useful information, study of social class differences during the early stages of language development has been much less common. One exception has been a follow-up study of thirty-two children of the Bristol sample. The study was concerned with the children's transition from home to school. So children's language was examined from 15 months through to 7 years. It was found that children's language tended to be less complex at school than at home. The most important antecedent to educational attainment at seven years was the child's familiarity with reading and writing. However, there was no evidence to suggest that lower class children were less well prepared for the demands of the classroom than middle class children. A further exception is the theory of Basil Bernstein to help account for how children acquire language. This theory, which has been in the making for over twenty years, still is not complete.

According to his theory, children acquire class identity through language. That is, Bernstein believes that the underlying vehicle of cultural transmission is the acquisition of an elaborated or a restricted speech code. Class membership determines which code is available for acquisition, so low class individuals are able to acquire only a restricted speech code. In turn, having this restricted speech code inhibits movement out of the lower class. The cycle then goes on through subsequent generations. On the other hand, membership of the middle class allows an individual access to an elaborated speech code.

The speech of a particular code is not marked by accent, but rather by the functional meanings produced. The restricted type of speech that working class children acquire is composed of routine

phrases, a large proportion of repetitions, and utterances which are context-bound (Bernstein, 1971). The elaborated speech of middle class children is characterized by its uniqueness. The speaker of the elaborated code creates novel meanings and speaks widely of things outside the current situation.

There has been much criticism of Bernstein's theory. It has been argued that the theory has changed with each publication, making it difficult to test empirically the validity of the codes (Dittmar, 1976). Another difficulty is that some of the descriptions are vague. For example, Bernstein presents a description of a stereotypical working class family. In the description there are seven characteristics. However, it is never made clear if all these characteristics must be present for a family to be labelled working class, or if only some features are necessary (Rosen, 1972). In short, opponents have dismissed the theory on the grounds that neither lower class nor middle class is defined in any measureable way (Rosen, 1972; Dittmar, 1976; Edwards, 1976). A more serious problem is that there is no clear indication as to why children are limited to the code of their class; for given nursery schools, play groups, the media and such, there must be some mixture of children and social class, and therefore of speech registers.

From the evidence on social class differences in school performance, it is not clear whether it is the language acquired or the language acquisition process that differs between the two groups. If Bernstein is correct in positing the existence of restricted and elaborated styles of speech, then it should be possible to find evidence for each style in naturalistic speech samples. Joan Tough (1977) has in fact presented evidence in

support of Bernstein. Language samples were collected from two groups of children, low class and middle class, when the children were aged 3 years, 5 1/2 years and 7 1/2 years. She found that though the children had similar language capabilities, with all the children showing the same range of language features, the middle class children used such features as complex noun and verb phrases more than the lower class children. She concluded that the differences in these young children's language occurred because "all participating children had language experiences from which they established similar knowledge about the language system but they had different orientations toward the use of language." (Tough, 1982, p 7). Wells (1977) has criticized Tough's research on two counts. First, he argues, the range of contexts open to the children in the observational setting is not spontaneous, therefore, the children's use of language in that setting is not necessarily representative of the full range of their language use. Second, the social class groups sampled by Tough do not represent the social class distribution of the general population yet she has generalized her results to the general population. Wells presents language samples from a group of children representative of the population in Bristol whose language comes from a wide range of contexts. Comparison of these samples suggests that low class children use as rich a language as middle class children.

Obviously, research on social class differences in language is complex. To explore social class differences it is necessary to follow strict scientific procedures. That is, the method used to distinguish low class individuals from middle class individuals must be clear and replicable. The coding categories and methods for analyzing the data must also be replicable. In research to date these requirements have not always been met.

Finally, and perhaps most importantly, the question must be answered as to whether a difference in performance between social class groups implies a deficit on the part of one group; or whether the difference is a learned one (see Blank, 1982). In practice, social class differences have often been taken to imply that low class individuals are less able than their middle class peers. Is this because of some genetic or other innate difference between the social class groups or is that low class children have learned to respond in ways which suggest they are less able than their middle class peers? The Bristol data suggests that for some low class children the language produced at home and at school is different enough to suggest that these children when at school are unable to produce more than an occasional mono-syllabic response; the language at home is rich and complex (see Wells and Montgomery, 1981, for a discussion about Rosie's language at home and school).

Sex Differences in Language Use.

The literature on sex differences in language use has been very inconsistent. Language studies through the 1940s consistently reported that girls were superior to boys on most measures of language (McCarthy, 1954; Carroll, 1960). McCarthy (1953) hypothesized that one reason girls were superior to boys was due to the home environment (i.e., mothers, not fathers, at home with the children) and that this was conducive to girls acquiring their sex role identities, whereas boys could not because they had less contact with their fathers and so developed their sex role identities more slowly. McCarthy's assumption is that language acquisition is facilitated if the child has acquired his or her sex role identity.

In contrast to the early studies of language, Templin (1957) found few differences between boys and girls and fewer that were significant. She suggests two possible reasons for her lack of significant differences: 1) early studies may have over-emphasized the differences between the sexes, perhaps because the prevailing laymen's view was that girls were superior in language ability to boys and 2) she hypothesized that child rearing practices had changed, due to the war, and therefore many of the reported sex differences were either no longer apparent or findings reported in early studies as differences were no longer considered to be differences in the late 1950s (Templin, 1957). There is a third and more probable reason for Templin's lack of significant sex differences, however. In the early studies of McCarthy (1930), Davis (1937), Day (1932) and Young (1941) scores were stated in their raw form but Templin used statistical methods and reported her findings in either percentage form or by using the arithmetic means. Whereas apparent differences might have resulted from raw scores, when more sophisticated statistical techniques were used many differences became non-significant (Cherry, 1975).

Research other than Templin's has also disconfirmed the existence of sex differences. Studies based on Mean Length of Utterance (MLU) as a measure of syntactic complexity failed to find significant sex differences (Menyuk, 1963; Woll, 1979). Woll, using the Bristol data, also found no sex differences on other measures of young children's early productive language.

There is only one agreed language feature where boys and girls differ. When the total amount of speech is computed, girls speak more than boys. Much emphasis has been placed on this difference.

Many researchers, such as Young (1941) and Burt (1949) have equated sex differences in speech with sex differences in language development. But both Cherry (1975) and Eakins and Eakins (1978) have argued that this assumption is clearly incorrect: more is not necessarily better.

Two recent explanations for girls speaking more than boys have been put forward. Cherry and Lewis (1975), in a study of mothers interacting with their two-year-old children, found that mothers spoke more to their daughters than to their sons. They also found that mothers of girls asked more questions and tended to repeat the child's utterances. The results suggest that the reason girls speak more than boys is because they are more often spoken to.

Another explanation has to do with the relative frequency of language occurring in different contexts. Wells (1980, 1984) found that in the Bristol sample mothers and daughters spent much time in household type activities, whereas boys less often partook in these activities. What he suggests is that because many of the daily activities do involve household chores and girls are more apt to help their mothers with the chores, girls are more likely to encounter speech than boys.

When the contextual interaction is controlled there are no sex differences in the amount of speech produced (Cherry, 1975; Cherry and Lewis, 1975). Nor were differences in amount of speech found in studies of children of nursery school age (Shatz and Gelman, 1973; Garvey and Ben Debba, 1974).

It is unlikely that sex differences reported in some studies are valid for the population as a whole. For instance, in Ramer's

(1976) sample of 7 children, all the girls were classified as rapid developers on the development of S-V-O constructions, but none of the boys. This difference is more than likely an idiosyncratic result from this sample.

The conclusions to be drawn from research on sex differences is therefore threefold. First, when statistical methods are used researchers will be less likely to find significant differences. Second, as with social class differences, the methods used to obtain language from young children will likely affect the results. Third, the only significant difference between boys and girls is in the amount of speech they produce. However, the difference is only significant in some contextual situations.

Position in the family as a source of language variation

Studies of sibling interaction have emphasized that older, or first born, children differ from their younger siblings in a variety of ways. Though it is the case that recent studies of siblings have been concerned with issues of social development, there have been some findings concerning communication and language use. In particular it appears that parents interact differently with a first child than with a later born child. In families of same-sex dyads, parents played less with the second born child than in families with different-sex dyads (Dunn & Kendrick, 1982b). Of course, it may be possible that the parents of same-sex children did not play much with the first born child, but this is perhaps unlikely.

When children are at the language acquisition phase, between one and two years, the language around them must have some influence.

In a number of reports Dunn and Kendrick have explored the language used by the older child to address the younger infant. They describe the older sibling's speech as being very similar to the parents' "baby talk". That is, they found that the four-year-old older siblings in their sample adjusted their speech in ways similar to the parents' adjustments. In particular, four-year-olds used a higher proportion of repetitions when talking to their infant siblings than to their parents or than their parents to the infant. Dunn and Kendrick also found that speech to the younger siblings most often occurred in one of two settings: either when the older child was trying to control the infant by use of prohibitions and the like; or when the two children were engaged in a joint activity.

A series of related studies on the behavioral interactions of siblings has been conducted by Lamb (1978a, 1978b). He watched siblings and parents in a laboratory setting to measure the amount of interaction that took place between the participants. Trained observers used a behavioral checklist to measure movements, eye gaze, actions, and other behaviors. Lamb found that younger siblings rarely directly regarded their older siblings, though it was the younger sib who maintained proximity and imitated the older child's actions. The older child, on the other hand, tended to focus directly on the younger child. However, when a parent was present, both children seemed to prefer interaction with the adult rather than with each other.

The studies of Dunn and Kendrick and of Lamb have relevance to language variation in at least two ways. First, according to Lamb, younger children tend to mimic an older sibling's behavior. If this is the case, then one might expect younger children to imitate

older children's language also. Since it is the case that a high proportion of sibling speech occurs while they are engaged in a joint activity (25% in the Dunn and Kendrick sample) younger siblings are provided with additional interacting time which might not be available from any other source.

There are several strands which suggest less positive influences on younger siblings' speech. First, information on first born and only children suggests that they receive a great deal of parental attention. Obviously, with only one child to look after, mothers would have more time and energy to focus on the child. By the time the second child has arrived, the mother's household workload has increased and demands from two children will be made upon her. Many mothers try to encourage the older child, especially if it is a girl, to nurture the younger child and so to take some of the load off the adult. When both children are trying to gain adult attention, the older child has a more sophisticated repertoire of attention-seeking devices, while his or her younger sibling is left with mainly expressive attention seekers. Nelson (1973)

hypothesized that it was due to this attention-seeking situation that second born children acquire a type of speech that is most concerned with both attaining and maintaining social interaction. First born children tended to receive much more attention from mother and could therefore explore the object world without fear of losing her attention.

It appears, then, that the position an individual has in a family may well affect his or her social development. In turn, the fact that this position affects social development suggests that other areas of development must also be affected. In particular, the language addressed to children may differ and consequently the

child's speech may develop in measurably different ways depending on whether the child is first born or not.

Section 2: Psycholinguistic Variation.

Thus far, language variation has been discussed in terms of environmental sources. In this section, language variation from sources within the child is discussed. Psycholinguistics is often divided into areas: syntax, semantics, pragmatics and phonetics. As each of these areas describes a different aspect of language, each will be described separately. Two topics, that of rate of development and amount of speech produced, transcend all aspects of psycholinguistics and it is appropriate to discuss these issues before moving into discussion of the other areas.

Rate of Development.

Rate of language development can be described in three ways.

First, children vary considerably in the age when they start using language; second, they vary in the length of time it takes them to progress through different stages of language development; third, children vary in the amount of vocabulary items they acquire in a given period of time.

Around twelve months is considered to be the age when most children speak their first words. However, some children begin as early as 9-10 months and some children do not begin until they are almost two. Though one assumes that if a child starts speaking at an early age he or she will become a proficient language user earlier, this is not always the case. Children go through the early stages of language development in differing amounts of time,

and the age at which they start is not related to the age at which they reach the end of one stage and beginning of another (though children who begin to use language at later ages do tend to develop very slowly). In Ramer's (1976) sample of seven children, the child who spoke the earliest was the slowest developer. Similar evidence comes from the Bristol sample. One child who was very advanced in the early stages of language growth showed only average language use by the end of the preschool years (Wells, in press).

Rate of development is measured in many ways: number of words in a vocabulary, or number of words acquired in a month, number of single word utterances versus number of multi-word utterances at a given time. Of the three children studied by Brown (1973) Eve had the fastest rate of development as measured by the mean length of utterances (MLU). Adam produced four times as many ungrammatical and anomalous forms than Sarah or Eve (Brown, Cazden, & Bellugi, 1969). In Nelson's sample of 18 children, word acquisition rate ranged from 4 to 26 words per month with a mean of 11.1. At 42 months the 128 children in the Bristol sample differed in the stage of development reached by the equivalent of almost three years. (Wells, 1984). In every study of more than one child, there is variation between the children in their rate of language development (Greenfield and Smith, 1976; Leonard, 1976, McShane, 1980).

Amount of Speech.

Children differ in the amount of speech they produce at any one time. This is obviously affected by many factors. Some of these factors include such things as time of day, number and identity of participants, activity and health. Nicky and Mathew, two children

studied by Greenfield and Smith (1976) differed greatly in the amount of speech produced. Nicky at eighteen months, four days produced 126 utterances while Matthew at eighteen months, eighteen days produced 217 utterances. In addition the boys differed in the number of utterances which had to be excluded from analyses because they were either unintelligible, uninterpretable, imitations, or isolated utterances with no link to the surrounding context. In the Bristol Language Development Project, data was collected using a timed recording device (see below). It was found that when thirty-two of the children were matched when their MLUs were 1.5 that the total number of utterances ranged from 32 to 118 ($X = 84$).

Types of Psycholinguistic Variation.

Psycholinguistic variation can occur in several ways. Variation of this type will be explored in the syntactic, semantic, pragmatic and phonological areas of young children's productive language.

Syntactic variation.

Evidence for both a universal order of language acquisition and for individual differences comes from research using the Bristol Scale of Language Development (Barnes, Gutfreund, Satterly, & Wells, 1983; Wells & Satterly, 1982; Wells, in press). The scale was constructed by noting the occasion when each child first used each language item. Then a statistical procedure was used that ordered the language items for the sample of 128 children. There was strong evidence for a universal order of language development with regard to some language items. However, some items showed no clear orders. That is some items were neither significantly preceded by nor did they significantly precede some other language

items. It is this group of language items which provides evidence for individual differences. The evidence comes, in part, from how the data were treated during the statistical analyses. Each language item was compared with every other language item, so that a series of two-by-two tables was constructed. Items were acquired either together, or one before the other, or neither was acquired. That is, two items A or B showed either the order A before B, B before A, A and B, neither A nor B. The language items which did not show significant orders of emergence could do so either because the two cells, A before B and B before A, were about equal; or because most children used the two items for the first time at the same time. It is the language items which show approximately equal numbers of children showing A before B and B before A which suggest that children have alternate orders of acquisition of language items.

More specific evidence for variation comes from the acquisition of plurals. One of the children in Brown's (1973) sample, Eve, showed free variation in the use of plurals, that is she used many ways of making words plural, whereas Sarah did not use plurals until she had fully mastered them. One might have expected that Eve would have correctly used plurals first, because she experimented so; however, that was not the case. Sarah mastered plurals during Stage I whereas Eve correctly mastered plurals in Stage III. The reason Sarah used plurals correctly before Eve might have been because she was developing language at a faster rate than Eve. On the other hand, when Eve did use plurals during Stages I and II she did not necessarily use them correctly. This suggests that there are at least two ways in which children come to master the use of plurals. One way might be for children not to use a syntactic construction until they can use it as adults do; another way might be to

experiment with a construction until they have mastered it.

Bowerman (1973), in her investigation of the early language development of two Finnish children, reported that one child varied the order of words while the other child maintained the order prescribed by the adult model. In a study (described below) by Ramer (1976) the girls also used varied word orders. However the boys in Ramer's sample did not. It was reported above in the discussion of cross-linguistic variation that there is evidence for a universal use of word-order (Slobin, 1982). However, within a single language, there is also evidence that some children vary word order, at least in the early stages of language development.

Ramer also described how the boys used dummy forms similar to those of pivot grammar. These dummy forms were used during a stage of acquiring the subject-verb-object construction.

The evidence presented above suggests that children differ in how they use specific syntactic constructions. However, because of the small sample sizes in these studies, it is difficult to know how prevalent the variation is in the population as a whole. Clearly, samples such as the Bristol sample may provide stronger evidence for the existence of substantial individual differences in the order of acquisition of language items. However, until the evidence on the order of acquisition of language items is fully explored the question cannot receive a more adequate answer.

Methods of Classifying Words.

Of the many dilemmas in the field of psycholinguistics, one that has been very controversial concerns the question of how much

meaning to attach to early child utterances. At the one-word stage, it is difficult to know what a young child means when he speaks a word. There has been much theoretical discussion as to the definition of 'word'. Anglin (1977) discussed the development of 'Terms of reference' which he defines as "a word and in particular a common noun which denotes or refers to real objects. They are units of speech which, it is assumed, become associated with meanings as the child develops." (1977, p. 27) As can be seen Anglin draws a distinction between the ability to produce a word and the knowledge of the word. Clark (1980) has recently added a further criterion that a child can not be credited with knowledge of a word until he or she is able to contrast it with another word.

Another difficulty in determining the meaning in an utterance arises when a child uses a word in ways which suggest he uses it to mean more than one thing. Griffiths and Atkinson, for example, describe three children who use the word 'door' as a verb. That is, at the one-word stage of language development, these children use 'door' as if it is an action. They also generalize its use so that 'door' comes to mean something similar to open (Griffiths & Atkinson, 1978). There are other examples of the early use of over-extensions cited in the literature. One young child used the word 'hat' for any objects placed on his head though he knew the correct names of the 'hats' (Gruendel, 1977), another young child used the word 'moon' to name lemon slices, hangnails and a chrome dishwasher dial (Bowerman, 1976). In a final example, a child who correctly picked out each vehicle object as it was asked for insisted in calling all of them 'car' (Rescorla, 1976, cited in Nelson, Rescorla, Gruendel and Benedict, 1978).

The above discussion raises the issue of what part of speech to

classify a word if the word is used in different ways. Nelson (1973) overcame this difficulty by categorizing a word only on its first occurrence. Other researchers have classified every occurrence of a word and therefore the part of speech a word is classified in is allowed to change (see Chapter III).

Semantic and Pragmatic Variation in Language Use.

Semantics and pragmatics, though different aspects of psycholinguistics, will be discussed together. This is because some of the studies done on the early language learning period combined both systems, making it difficult to separate one from the other.

Bloom, Lightbown and Hood (1975) explored the emergence of the semantic relations of four children. The orders of emergence were quite similar across children. That is, action and locative action preceded state, locative state and notice. However, the children did vary from one another. Peter and Kathryn both acquired action, attribution, locative action, and possession in that order. Peter then went on and acquired locative state, notice, state and intention; while Kathryn acquired state, locative state, intention and notice. The other two children in the sample (Gia and Eric) had acquisition patterns that were more varied (Leonard, 1976).

In a study of eight children, Leonard (1976) charted the emergence of semantic categories in multi-word utterances. Negation emerged much later than in similar studies. In the Bloom et al. (1975) study, for example, negation was one of the earliest categories to emerge. Leonard hypothesized that the reason negation appeared late in his sample might have been due to the low frequency of occurrence

of such utterances; it is documented that low frequency items will tend to appear to emerge later than they actually do. However, as the methods of data collection were similar in both studies and as both studies analyzed spontaneous speech interactions, the type of speech produced by all the children should have been similar.

A study of six children by John McShane (1980) offers considerable evidence for individual differences in the children's use of functional categories. McShane divided utterances into the following categories: regulation, statement, exchange, personal and conversation. Each of these categories was then sub-divided. Within each sub-division McShane reports the major types of lexical items used to identify the category. For example, attention utterances took the forms of 'look', 'that', name of an object, name of a person, or miscellaneous. The most popular forms were 'look', 'that', and name of a person. As can be seen in the table below, the six children varied considerably in the number of attention utterances and requests. Though the figures are presented as number of tokens, it is possible to see that all the children, except Emily, produce more requests than attention utterances. Proportionally, David seems to produce many more requests than the others. Emily's transgression from the group may be suggestive of one of two things. Perhaps attention utterances are immature in form and request utterances are a more mature form, which would indicate that Emily is a less mature speaker. Or perhaps Emily is less interested in directly regulating the behavior of others. It would appear, then, that these children are using regulation in different ways.

Number of Regulation Utterances produced by Six Children

(McShane, 1980)

	Attention	Requests	TOTAL
Alice	62	257	319
Brian	114	418	532
Carol	4	27	31
David	4	136	140
Emily	90	39	137
Fiona	11	76	87

McShane divides his statement category into descriptors, locatives and information. Again the children vary considerably in the actual number of utterances they produce within each category. The table below shows that all the children produce mostly descriptors. Carol, who produces the fewest utterances, also uses fewer locatives than utterances which give information.

If the total number of utterances in the Statement category is compared with the total number of utterances in the regulation category it can be seen that two children, Alice and Emily, produce less statement utterances than regulation utterances compared to the other four children.

Number of Statement Utterances Produced by Six Children

(McShane, 1980)

	Descriptors	Locatives	Information	Total	Reg.Tot.
Alice	203	42	13	258	319
Brian	680	164	94	938	532
Carol	31	3	9	43	31
David	132	22	2	156	148
Emily	50	9	4	63	137
Fiona	332	92	13	437	87

Unfortunately, McShane presented his results in a raw form by specific category, without providing the category totals. This makes it difficult to compare the children for two reasons. First, the children produced different amounts of speech and therefore cannot be compared unless the raw forms are turned into

percentages. Second, to compare one category with another, for example Statement and Regulation utterances, it is necessary to go through each table in McShane's book and compute the totals.

Phonology

Research on the development of the phonological system, like research in other areas of psycholinguistics, has until recently been concerned with the description of universals. Such a description was proposed by Jakobson (1941), who postulated that the nearly universal phonological differences (oral-nasal: /B/ v /M/, labial-dental: /P/ v /T/, stop-fricative: /P/ v /F/) develop first, with frontal consonants (/P/ v /M/) being followed by back consonants (/K/ v /G/). Language-specific speech phonemes develop last (as in /æ/ in English).

There are, however, difficulties with Jakobson's theory. First, he proposed that the underlying force of phonology development is innate; second, he suggests a stage-like progression; and third, there are other aspects of phonology (merging sounds, formation of syllables, etc.) which are not accounted for.

Research has been unable to support a stage-like theory of the development of phonology. The evidence for individual differences in the acquisition of a phonological system has grown rapidly in recent years (see Ingram, 1976). There are currently two major methods of examining phonological development (Ferguson, 1979). One method is to examine the acquisition process of a particular sound, charting variation across children. The alternative approach is to examine children longitudinally, charting each child across sounds.

The former method is illustrated by Ingram (1975), who discussed the alternative routes children follow in the development of fricatives. The latter method, described by Ferguson (1976), is based on preference studies (when a child favors, or disfavors certain sound features) or on word-shaping strategies (when a child consistently reduces a phonetic or structural feature of a word (i.e., elephant)).

It is hypothesized that these strategies may be the result of different learning styles and Ferguson (1979) notes two: the 'continuous system builder'; and the imitative learning style. A system builder is a child who "constructs a tight phonological system into which he fits his vocabulary" (Ferguson, 1979, p. 196). Typically, this child adds new words cautiously, fitting them into his phonetic system. The imitative learning style, on the other hand, is demonstrated by the child who shows a phonological system which has a loose and variable organization. Typically such a child would experiment with new word sounds, whether or not he has the capacity to form them properly.

The research literature is quite explicit about the idiosyncratic nature of the sound system among adults and children, which strengthens the case for individual acquisition processes.

Ferguson summed up this argument by stating: "every user of a language variety develops over time his own inventory of phonetic elements, the phonological organization of them, and a set of processes applied to them, and this phonological development begins at or before birth and continues until death." (1979, p. 192-193).

General Conclusion.

Several areas within socio- and psycho-linguistics have been discussed in terms of variation: firstly, environmental variation that might account for differences in children's language performance was explored; then secondly, variation among children in productive language was discussed. There is evidence within each area of this chapter for a universal order of acquisition of language features and also for individual differences. It is probable that both camps are right. Universals in language development undoubtedly exist. It is perhaps more a question of how finely tuned the universals are. For example, it is accepted that children develop language by using one-word utterances before they form two-word utterances. Multi-word utterances are used last. These major stages in language development may not be the only stages. However, differences among children could account for variation in the finer details of language growth.

Chapter II

Studies of Language Variation

The purpose of the present chapter is to describe variation in terms of groups of variables. In the previous chapter variation from environmental sources or isolated psycholinguistic sources was described. However, there are a group of studies which over the past 10 years or so, have described variation in terms of patterns of language acquisition. In these studies it has been possible to identify groups of variables that some children seem to use more than other children. For example, Bloom, Lightbown and Hood (1975) suggest that some children rely on pronouns while other children rely on nouns in the early stages of multi-word utterances. The major studies will be described in terms of both the methods and the results. Finally, five research hypotheses formulated from the literature review will be presented.

Studies of Different Language Learning Processes.

Since the early 1970s, a number of researchers have explored individual differences in children's early language development. The first studies of this kind were partly carried out as a backlash to the syntax-oriented belief in a universal pattern of language learning. However, the study of individual differences is now an established research area.

It has long been accepted that children differ in the amount of speech they produce and in their rate of language development (see McCarthy, 1953; Carroll, 1960 for reviews of this literature). However, the studies described below suggest that children's

language differs in other systematic ways.

Bloom

Bloom investigated the acquisition of grammar by three children (1970, 1973). For this study, she collected language data by recording the children, Eric, Kathryn and Gia, in their homes. Each recorded session took place for approximately six hours. To obtain this it was necessary to record over a period of two to three days. The sessions took place every six to eight weeks. The children were first observed when they were 19 months old. Data collection ended when each child was 27 months old. It was hoped that, with a long observation period, children would be recorded in a variety of natural ongoing activities in the home; activities which would at times include mothers going about their daily tasks. However, play sessions with the observer seemed to be the most common activity.

In categorizing early child speech, Bloom found that some child utterances could have multiple meanings. Rather than treat such utterances as uncodable, she examined the preceding speech and the non-linguistic context to hypothesize the child's meaning.

Analyses of the speech of the three children were made in a variety of ways. First, utterances were categorized according to the seven principles of speech events proposed by Hymes (1964). The seven factors of a speech event include message-form, code, channel, sender, receiver, topic and context. Obviously the channel was always speech and, since the analyses were only concerned with child speech, the sender was always the target child. The receiver was whomsoever the speech was directed to;

most usually the mother or the observer. 'Topic' was what the child was referring to. 'Context' was divided into sub-categories of spatial proximity, temporal proximity and previous speech. 'Message-form' was divided into four categories: Comments, when the referent was part of the ongoing activity; Reports, when information was being passed about a non-present referent; Directions, when the child sought to force a change of activity; and Questions, when the child sought information or confirmation from another person.

Grammars were written for each child, at each observation, using the principles of generative transformational grammar. The goal for writing grammars was to "provide an account of how underlying structures are specified and then mapped into the surface structures of the obtained sentences." (Bloom, 1970, p. 24) As such, the grammar would take each utterance as the surface string and, by working backwards through transformational rules, try to discover how the utterance could be accounted for.

The results indicated that child language is composed of substantive and relational elements. By substantive, Bloom means elements which have a fixed semantic meaning but whose grammatical position is flexible. She uses the example of 'mommy' as having a static meaning but which can be used as subject, object, possessor etc. Relational elements have fixed grammatical position for the child but the meanings still vary. Words such as 'no' and 'more' when used as pivots in pivot grammar or in telegraphic speech are two examples of relational use.

The three children differed in the proportion of substantive to relational speech they used. This led Bloom to hypothesize that

there is more than one way children learn language.

In another analysis of the three children, Bloom, Lightbown and Hood (1975) categorized multi-word utterances on the basis of their semantic-syntactic relationships. A fourth child, Peter, was also included in this study. Categories of action, locative action, locative state, notice, state and intention made up the categories of verb relations. Further categories of possession, attribution, negation and existence were also included. In general the children produced more utterances in each category as they matured. The categories of existence, nonexistence and recurrence appeared to decline with maturity, leading the authors to speculate that these were early constructions which were replaced with more complex verb relationships. The sequence of development was not stable for all the children. In general action relations preceded state relations. For Eric and Peter the acquisition of possession and attribution were late developments. Eric and Peter also seemed to be learning a different type of syntax from Kathryn and Gia. The boys used many more relational terms and a higher proportion of pronouns than the girls. In sum the authors state:

All the children then were quite similar in their semantic knowledge, but there was variation among them in their knowledge of syntax-they were learning different systems of semantic-syntactic structure that were virtually mutually exclusive in the beginning. There was an impressive consistency within each child and between Eric and Peter on the one hand and Kathryn and Gia on the other when MLU was less than 2.0. (1975, p.

20)

The results indicated that two children used proportionally more pronouns while the other two children used proportionally more nouns. They hypothesized that the children were focusing on different language features to learn language, in this instance either using nominal references or pronominal references.

Nelson

Another study which found nominal/pronominal differences in children's language was that by Nelson (1973). Unlike Bloom, Nelson focused on the earliest one-word utterances; the children therefore were much younger at the onset of the study. The eighteen children ranged in age from 10-15 months at the beginning of the study and all children completed the study at 25 months. A follow-up visit was made when the children were 30 months.

The first fifty words a child acquired were used in this analysis. Information on these fifty words was obtained from detailed reports kept by the mothers. Recorded play sessions were used to verify the mothers' reports. The fifty words were categorized into semantic-functional categories including general nominals, specific nominals, action words, modifiers, personal social and function words. These were further divided into more specific categories. Nelson used the proportion of general nominals in the children's fifty word vocabularies to place children in either the referential (more than 50%) or expressive (less than 50%) groups and then compared the groups on the basis of the other language categories and some sociolinguistic measures.

The referential children obviously had more general nominals in their vocabularies than the expressive children. Within this category it is interesting that it is only on the number of object names and words for animals and people that the referential children had more items. The juxtaposition of object names being used more by referential children and pronouns being used more by expressive children is similar to the nominal/pronominal difference reported above by Bloom. The groups showed no difference in the names for substances, letters and numbers and abstractions. Within the category of specific nominals (names for people ('girl', 'boy'), animals and objects) the groups did not differ; nor did they appear to differ in the number of action words which made up the first fifty words. The expressive children had more personal social words, i.e., more assertions and social expressives; and they had more question words and miscellaneous words categorized under function words. The table below provides the actual percentages for the coding categories by group. It is evident that the groups do show differences in the types of words acquired in this early phase.

Percentage of word types acquired by the Referential and Expressive Children from Nelson (1973, p. 23)

	Referential (N=10)	Expressive (N=8)
General nominals	62%	38%
Specific nominals	13%	15%
Action words	12%	15%
Modifiers	7%	12%
Personal-social	5%	11%

Function words

1%

8%

The referential children had significantly larger vocabularies at 2 years than the expressive children. They also acquired significantly more words per month than the expressive children. However, there were no significant differences in the age by which the children had acquired fifty words or in the age by which they acquired ten phrases; nor was there a difference between the groups in the children's MLU at age two years (see Table 10 in Nelson, 1973, p, 38).

Results of various tests administered to the children throughout the course of the study indicated that comprehension was associated with all the language indices reported above, which suggests that rapid development or early development are associated with comprehension skills. By age two, slower developers tended to imitate speech and to use repetitions more often than fast developers. The referential children asked more questions of the "What's that?" type than the slower children.

Nelson hypothesized various language learning patterns based on the results of her studies. These patterns are composed of parents and children being either matched or mis-matched on the referential or expressive styles of speech: both participants might be referential, both expressive, or there might be one of each. A further dimension on which variation was observed was whether the adult accepted the language style of the child. While the data was supportive of these hypotheses, because the study ended at 30 months there is no evidence for their existence after that age.

To summarize, Nelson divided eighteen children into two groups on the basis of how many general nominal words were in their vocabularies. She found differences between the groups on the number of items within other semantic-functional categories as well as some differences in MLU, imitations and repetitions at 2 and 2 1/2 years.

Ramer

In a study of the development of subject-verb-complement construction, Ramer (1976) reported that the seven subjects under investigation showed a sex-related difference in the routes they followed to acquire the construction. The focus here was on rate of development rather than on chronological age. Rate was taken to be the time taken from the initial onset of syntactic speech to the age when the criterion was reached. At the beginning of the study the children ranged in age from 1 year 3 months to 1 year 8 months. Data collection stopped when the syntactic criterion was reached. The children, at the end of the study, were between 1 year 7 1/2 months and 2 years 3 1/2 months. Six children were seen in their homes for a two-hour naturalistic play session once every three weeks. The seventh child was observed in the nursery school she attended.

The four girls in the study all reached the 20% criterion of using the S-V-C construction earlier than the three boys in the sample. Ramer reported that the slow developers used presyntactic forms. These included dummy forms which "extended a single word utterance by the use of a SINGLE PHONETIC UNIT, the dummy element" (1976, p. 54); empty forms which "combined some STABLE GROUP OF PHONETIC ELEMENTS with a traditional word" (1976,

p. 54); and reduplicative constructions which "were composed of a single word produced successively, usually twice but occasionally three times, within one intonation frame" (1976, p. 54). The rapid developers rarely if ever used any of these pre-syntactic forms. The rapid developers varied the word order of their sentences significantly more than the slow developers. Ramer hypothesized that the pre-syntactic forms ease the slow developers into syntax because the child does not have to cope with content or semantic information. She also hypothesized that there may be a connection between risk-taking in language use and rate of development.

Though it is clear from the above that these children showed evidence for individual differences in the way they approached the task of learning syntax, in another analysis of the same data Ramer (1977) found considerable evidence for a universal pattern. For this analysis Ramer examined the children's utterances and charted the development of complex syntactic structures. She graded the complexity of early grammatical relations so that, for example, in the utterance "pretty dress", both items refer to one thing (complement component, cc), whereas "run home" has two referents (verb + complement, vc) and is therefore said to be more complex. The results indicated that all of the children followed a similar progression from simple to complex, i.e., children used subject-subject, verb-verb, complement-complement before combining referents within a two-word utterance. The third stage contained all the three-word utterances in which two elements referred to the same referent while the third element referred to a different referent (subject-subject-verb). The fourth group of elements to emerge was the subject-verb-complement construction, still combining three elements. The final syntactic group to emerge involved four elements with two referents per utterance

(subject-subject-verb- verb).

Ramer found evidence for both language universals and individual differences within the one set of data. Each child showed a similar progression in the route to acquire syntactic forms. However, these children showed considerable differences in their rate of development. Whereas the studies of Bloom and Nelson concentrated on actual components of language to investigate differences in language learning styles, Ramer began from the other end and concentrated on rate of development and then looked at the differences in language use.

Dore

A study of the early use of pragmatic functions by two children was carried out by Dore (1974). This study was based on speech act theory as originally proposed by Searle (1969). A speech act is composed of two parts: the proposition, or the actual string of words in the utterance; and the illocutionary force, or the intention implied by the speaker as to whether the utterance is, for example, a demand or a question. There is an indefinitely large number of speech acts in English, so to categorize language using this method it is necessary to group speech acts into similar types. Dore went a step further and proposed a finite set of 'primitive speech acts' (PSA) which encompass children's earliest utterances.

PSAs were designed to describe single word utterances which are accompanied by enough non-linguistic information for it to be possible to hypothesize about the child's intention before the child is capable of using complete adult-like sentences.

The PSAs Dore used in this study include labelling, repeating, answering, requesting (action), requesting (answer), calling, greeting, protesting and practising. In mature speech each of these eight PSAs would be broken down into many sub-types. For example, labelling would include instances of labelling things as well as object classification ("Spot is a dog"), putting a name to an abstraction or defining a word.

A boy and a girl were each video-taped in a nursery school setting with either the teacher or mother present every two weeks for 30-45 minutes. Each child was fifteen months old at the start of the study. Data collection ended when each child was spontaneously producing two-word utterances: the girl was seventeen months and the boy nineteen months old. All intelligible child speech was coded according to the PSA classification described above. Four types of information were used to classify utterances: the speech produced; the non-linguistic activities; the adult's response, if any; and contextual information.

The children varied in the amount of speech produced. The girl used many more utterances containing words than the boy. More importantly, the children differed in how they used their speech. Though the boy produced overall fewer utterances, these utterances contained a broader range of PSAs than the girl's speech. The girl and her mother seemed to use many verbal routines, such as labelling games. The boy and his mother did not use such routines. Another difference between the children was that the boy's speech involved people 63% of the time, whereas the girl's speech was people-oriented only 26% of the time.

Dore hypothesized that these children were developing language differently. He suggested there may be "word-babies" and "intonation-babies". Because one type of speech is so clearly concerned with things and the other type concerned with manipulating the environment to achieve ends, Dore called these "code-oriented" and "message-oriented" styles. It will be recalled that a distinction between Nelson's referential and expressive speakers is that referential speakers talk more about objects and expressive speakers talk more to maintain interaction.

In sum, Dore analysed the functional uses of one-word speech in terms of the primitive speech acts that children produce. This is very different from the studies reported above, which concentrated more on syntactic or semantic aspects of children's early speech.

Bretherton, McNew, Snyder and Bates.

The most recent study of individual differences in language learning is that of Bretherton, McNew, Snyder and Bates (1983). Rather than identifying children who typify a certain language learning style, Bretherton, et al. focused on the language features which typify a language learning style. They propose, in a research sense rather than a theoretical sense (see Nelson, 1981, Lieven, 1978, 1983; Peters, 1981) that children's early styles of speech change and alter depending on the language situation. Therefore they have used statistical methods which preclude identification of individuals.

Thirty children participated in a longitudinal investigation which involved maternal interviews, recordings of spontaneous child

speech at twenty months and the administration of language tasks at twenty-eight months. There were equal numbers of boys and girls. All children were seen in their homes and in the laboratory with mothers present.

In the maternal interviews mothers were first asked a series of questions about the child's one-word utterances. These questions centered around the following topics: the level of the child's decontextualization; whether the child responded appropriately to various question forms; whether the child used any of the case relations of possession, agent, patient, location, dative and instrument; amount of child imitation; amount of labelling; how often the child requested a label; and what idiosyncratic items the child used. If the mother reported that her child produced multi-word utterances the following questions were asked: Did the child use any pivot terms?; did the utterance contain two or more case relations?; did utterances contain pronouns?; what type of inflections did the child use?; what auxiliaries did the child produce?; did the child use 'the' or 'a'?; and how many prepositions did the child use?

At twenty months the videotaped home session involved tasks of novel concept learning and free play. The laboratory session included elicited symbolic play, language comprehension, imitation and mother-child free play.

At twenty-eight months the children were given the Peabody Picture Vocabulary Test, a grammatical morpheme comprehension test, and were rated on the Colorado Child Temperament Scale. In addition, MLU scores were computed from utterances obtained during a thirty minute session of elicited symbolic play.

Several analyses were done to show that maternal interviews adequately assess the child's language abilities during the one-word and early multi-word stages of language development. To do this, item by item comparisons between interview measures and child language scores were made. The authors were confident that the interviews provided appropriate data. Therefore, data from both the maternal interviews and child language measures were used in cluster analyses.

Cluster analysis is a statistical technique which groups variables which show the least variance. It does not search for underlying relationships as do some factor analyses, but rather focuses on the z-scores and standardized scores to put naturally related variables together. (See Chapter III for a further description of the cluster analysis technique.) Due to the procedures used, different clusters may be correlated. Various computing techniques exist for performing cluster analyses. Bretherton et al. used the procedure developed by Tryon and Bailey (1970).

Seven clusters were produced by the data: four involved the maternal interview data; and three came from the child language measures. All clusters had high levels of internal consistency, which is an indication that the clusters are real. Further, all the clusters were highly correlated.

Two of the interview clusters revolved around multi-word utterances and two around single-word utterances. The latter clusters included one which involved appropriate responses to questions, labelling and imitation, called Dialogue cluster; the second cluster was called General Semantic-Cognitive cluster and

included measures of decontextualization, case relations and imitation of new items. The two multi-word clusters were called Multiword Referential cluster and Multiword Grammatical Morpheme cluster. The first contained items of noun phrases, case relations, pivot forms and noun-noun phrases. The second cluster included items based on phrases with pronouns and no-nouns, total numbers of pronouns, verb inflections, articles, auxiliaries and prepositions.

The three observational clusters included a Multiword Referential cluster, a Multiword General Morpheme cluster and a General Dialogue cluster. The items in each of these clusters were very similar to the items in the same-named clusters from the interview data, described above.

The results of the cluster analyses both replicate and contradict some of the findings reported above from other studies of individual differences. The clusters provide some evidence for the existence of an 'analytic' speech style, composed of nouns and a referential preference. They also suggest the existence of a 'holistic' speech style, similar to the pronominal/expressive styles discussed earlier. However, correlations between the clusters and sex and birth order did not produce any significant indications that these latter variables are related to speech styles.

Bretherton et al. suggest that language learning styles represent a continuum and therefore it is language features which should identify a style of language acquisition. Further they suggest that children's speech is not either 'analytic or 'holistic' but a mixture of both. In addition to the findings, this study is the

first investigation to use language features which cover many aspects of language. They included measures of grammatical, syntactic, semantic and pragmatic aspects of language, thereby producing a more complete picture of the child's early language development than previous studies.

Other Studies of Individual Differences

Peters (1977, 1980) described the language development of one child (Minh). Minh differed from all the subjects mentioned above in that his mother was not a native English speaker. In addition, because the family lived in Hawaii, Minh was exposed to Hawaiian English as well. Therefore, at home, Minh heard English, Hawaiian English and Vietnamese. His early speech tended to be garbled and unintelligible. Peters noted that the functional qualities of the child's speech changed depending on the situational context. In social contexts the child's speech was composed of fairly unintelligible multi-word phrases. Peters refers to this as a 'Gestalt' style of speech which is similar to Nelson's Expressive speaker or Dore's Message-oriented child. When the child was being read to or engaged in object labeling he used short clear single-word utterances which Peters calls an 'Analytic' style of speech. The 'Analytic' style is similar to Nelson's Referential speakers or Dore's 'Code-oriented' child.

Horgan (1981) detailed two language styles being used by precocious and slower children. This study is extremely interesting because it emphasizes that a noun-oriented style of speech (referential) is most evident when the child is being read to. Horgan matched 15 pairs of children between twenty-four and fifty months on MLU; each pair differed in age by six or more

months. Tests of semantic relations, vocabulary and comprehension were given to the children in their homes with mothers present. The tests were presented in a way similar to reading. To begin, Horgan read to the child to relax the child and herself. Then she showed a series of line drawings to the child and asked the child to tell what was happening for the test of semantic relations. In the vocabulary test Horgan showed the children pictures of objects and asked them to tell her what they were. In the comprehension test children had to match a sentence with an appropriate picture.

The speech from each child was then coded for the mean number of noun phrases per utterance, mean preverb length, types of constructions, comprehension, mean number of main verbs per utterance, and mean number of auxiliaries per verb phrase.

The results suggest that the precocious or younger children in this sample used language to talk more about objects. Their speech contained more nouns, and they gave more details in describing pictures. In addition, the younger children produced many more errors than the older, slower group. This may have been due to the fact that the precocious children used a wider variety of constructions. Horgan sees this risk-taking as replicating Ramer's risk-taking fast developing group (Unlike Ramer's sample which produced a sex-related difference in the rate of development, the two groups in Horgan's sample were not related to sex.) It is also similar to the code-oriented child described by Dore.

The older group were superior on the comprehension task. A similar finding has been reported by others (see Benedict, 1979; Chapman and Kohn, 1977). It implies that though the older child

may lag behind in productive language skills, he or she may instead be concentrating on receptive abilities. It is possible that children are unable to excel in both the productive and receptive facets of language at this early stage.

Horgan's study has concentrated on just one of the speech styles typically identified in the literature. By exploring noun-oriented speech she has shown that children's language features differ according to their rate of development. Further, her two groups were composed of equal numbers of boys and girls and equal numbers of first-born children and she found that 1) there were no sex differences in relation to the variables studied and 2) that position in the family did not play a significant role in accounting for the observed differences in language use.

Limitations of the Studies of Language Variation.

All but one of the studies reviewed above have concentrated on a small number of language features; be they syntactic, lexical, semantic, or functional. Language and language learning involves an interaction between all these features. It does not occur in a vacuum. Language takes place between individuals in a variety of situations. Language creates cognitive demands on the individual both to decode and to send messages, as well as strong demands on the memory capacity of individuals to recall and store information; it also involves social skills, such as for example, turn-taking and body language. For the young child, learning language is not just a matter of learning the words and the tune. It is learning which words to use, when, to whom, to get whatever.

It should not be at all surprising, with all the various skills

involved, that children tackle this task in different ways. In a recent report, Nelson (1981) suggests that an underlying source of difference in the language learning patterns of children is probably the different contextual situations the child is exposed to. Context as Nelson uses the term here involves both situational context and interactional context. In other words language can be used primarily for social interaction or to exchange information about something. As Nelson and others have stressed however, (see Bretherton, et al., 1983; Wells, 1983) children learn both types of speech, but they may vary as to how often they use each type. Nelson stated:

"One point that must be emphasized again is that this is not an argument for two distinct patterns, however intriguing such a possibility may be and however prevalent the tendency to dichotomize the data. Certain characteristics seem to go together,...,but most children present a mixture of these characteristics. They put the bits together bit by bit. The extremes show us more clearly what the bits are." (1981, p. 183)

The studies discussed above all appear to be describing the same basic continuum. The terms used, be they referential/ expressive, code or message oriented, analytic/gestalt, substantive/ relational and analytic/holistic, are names for very similar pairs of opposed characteristics. The difference is that each study has approached the question of how children learn language from a different set of descriptive criteria: how to describe language (syntactic, lexical, functional classifications); how to measure language (first fifty words,

all speech in a play session, speech throughout the day, maternal interviews); how to analyze the data (correlations, T-Tests, nonparametric techniques, cluster analyses); or how to interpret the results (hemispheric dominance, adult input, situational context).

There are methodological difficulties in each study discussed above. Nelson coded only the first fifty words that a child acquired. Though she found many significant differences in language learning style, her study's major shortcoming is that it takes no account of how words change and vary both in meaning and function as the child's language progresses. The studies of Bloom, et al., Ramer, Dore and Peters have so few children as subjects that it is difficult to discuss individual differences or patterns of language use, although they are useful as descriptions of possible areas of difference. Bretherton, et al. tried to combine all aspects of language to produce clusters of language features which describe language learning styles. Though this study has taken a major step forward by exploring such diverse language features as characteristics of dialogue, grammatical elements and case relations, it is still dubious whether maternal interviews and language tasks adequately assess the natural language of the child or whether variables from such diverse sources as maternal interviews and elicited speech samples can be combined in a statistical technique such as cluster analysis. In addition, some of their measures, such as MLU, were obtained during an elicited symbolic play session. It therefore is questionable whether MLU has been adequately assessed.

Despite the methodological problems, each study found

significant differences in the language items used by their samples. Each study defined two polarized language learning strategies from their data. It is possible that the findings of one study can be related to findings from another study. So, for example, the noun/pronoun difference from the Bloom et al. study can be related to the referential and expressive speech styles of Nelson which is related to the code or message orientation of Dore.

Specific hypotheses for research.

Five research hypotheses can be formulated from the studies reviewed above. First, in a sample of English speaking children, Bloom found that some children show a preference for nouns while other children show a preferences for pronouns at the beginning of the two-word stage of language development. The language examined in the present report is concerned only with one-word utterances. However, it would be important to know if the noun/pronoun preference that Bloom found to exist in two-word utterances shows any evidence of existence at the one-word stage of development. The first hypothesis, formally stated, is: Some children show a preference for nouns and other children a preference for pronouns at the one-word stage of language development.

The second hypothesis is based on Nelson's claim that children show a preference for either a referential or an expressive speech style. Some children would be expected to use speech to talk about the object world in a referential way. Other children would use speech to foster interaction with other people in an expressive way. Nelson's referential and

expressive language styles are based on the number of general nominals in a child's first fifty words. As will be seen, in the present study, all speech produced during the course of the study is analyzed, therefore it is not possible to replicate the method used in the original investigation. However, in the present study, the description of referential and expressive speech includes characteristics of the pragmatic coding.

Therefore, by using the pragmatic coding it should be possible to form categories similar to those used by Nelson. The second hypothesis therefore is: Referential and expressive speech styles will emerge based on pragmatic codings.

Third, Nelson found an association between referential speech and object names. Therefore one would expect that referential speech would be concerned with the object world whereas expressive speech would be concerned with people. The formal stated hypothesis is: The focus of reference is objects in referential speech and the focus of reference is people in expressive speech.

Fourth, referential speech is usually about the object world. Such speech often occurs in situations when the child is being read to or when an adult and child are talking, for example the 'What's that?' game, which for many children is their introduction to looking at books. The hypothesis is therefore: Referential speech most often occurs in response to adult speech. In other words, in referential speech the child is the follower in the discussion.

Finally, the Bretherton et al. study suggests that certain language features will be associated with one type of language.

Therefore the final research hypothesis suggested is:

Referential speakers will use more nouns, will have a higher proportion of responses, and will talk proportionally more about the object world; whereas expressive speakers will use more pronouns, will initiate conversations more often, and their speech will refer more to people than to things.

Summary

In this chapter studies of language learning styles have been discussed in detail and compared with each other. Criticism of some the methodological limitations of each study have been made. It is clear that there is a variety of ways in which researchers have approached the study of individual differences in language learning. From the studies, five research hypotheses have been developed, which form the basis for the present investigation.

Chapter III

Five research hypotheses were described in detail in Chapter II. This chapter will describe the methods and procedures used to test each research hypothesis. The coding systems used to categorize the children's speech will also be described.

The research hypotheses are all partial replications of previous work in the field. The reason for this is twofold. First, one major limitation of all the studies reviewed in Chapter II was the very small group of children studied. In the current investigation a much larger group of children than is normally found in studies of language development will provide the language data. Second, each of the studies reviewed earlier utilized a different methodology. It would therefore be possible to fully replicate only one study. Therefore, a methodology had to be arrived at that would allow replicating as many of the previous findings as possible.

Method

The children in this study form part of a much larger sample of children who took part in the Bristol longitudinal study of language development, under the direction of Gordon Wells at the University of Bristol. There have been three main areas of concentration in the Project. First, the Project team has attempted to describe the course of language development in normal children from 15 months to 60 months (Wells, in press). Second, the thirty-two youngest children in the sample were observed both at home and during the beginning school years to investigate the relationship between the language used at home and school. The aim

of this study was to identify features of language which affect and/or promote early educational attainment (see MacLure and French, 1981). The third area of concentration has also involved the thirty-two youngest children. In this investigation the development of conversation is being explored. A much fuller description of the Bristol Language Project may be found in Wells (1981).

The 128 children were selected to represent the full range of social background, which, in this instance, was based on a formula combining each parent's occupation as categorized by a five-point scale of the Registrar General's Classification, together with each parent's level of educational attainment. Final selection was based on an interview with parents. Children whose parents were not native speakers of English were not included. Children with any known physical or mental handicap were excluded from the study, as were children from a multiple birth. At the start of the study the younger children were 15 months old and the older children were 39 months.

Observations were made in the children's homes at three monthly intervals for a period of 2 1/4 years. The child wore a radio-microphone that had a timing device which was programmed to switch on a tape recorder for 90-second periods at approximately 20 minute intervals throughout the day from 9am to about 6pm. The recording equipment was always delivered to the child's home the evening before a recording day. Typically, mothers would place the harness containing the microphone under the child's jumper as he was dressed in the morning. Usually the child wore the microphone throughout the day until bedtime, though it was often removed if the child was put down for a nap or if the child was being bathed.

Parents were instructed to place the microphone near the child if it was removed. Due to the sophistication of the recording system no observer needed to be present during the day. One of the research team would go to the home, in the evening, and play the full tape back to the parents. At that time parents would provide as much information as they could remember about the activities that had taken place during the day, such as what the child had been crying about or that the child had said 'birdy' when looking out of the window. It was also during this session that parents could ask to have irrelevant sections of the tape deleted if they did not wish a conversation to become part of the database. Deleted sections usually consisted of private conversations between two or more adults.

Sample

The sample for this study consists of a subset of the original sample: the 32 younger children whose speech was investigated in the follow-up from home to school when they were five to seven years of age. In addition they have been the focus of a number of detailed investigations (Barnes, Gutfreund, Satterly and Wells, 1983; Wells and Gutfreund, forthcoming; Wells, 1983; in press). Since the collection of the original language data from fifteen months to forty-two months, additional data has been gathered from these children in school at 5, 7 and 10 years (Wells and French, 1980; Wells, Homewood and Offord, 1983). Interviews have been carried out with parents and teachers at various times over the years, which provide a picture of the children's early home experiences. It seemed, therefore, appropriate to explore variation within a group of children already the focus of much research attention.

There are 16 boys and 16 girls in the sample. The children have been divided into 4 social class groups. The actual breakdowns are given in the table below.

Social Class Groups by Sex

	High	mid	mid	Low	
Males	4	2	4	6	16
Females	4	5	3	4	16
TOTAL	8	7	7	10	32

Procedure

Three sequential recordings were analyzed for each child. The recordings were chosen so that the last observation took place when the child's MLU for structured utterances (MLUS) was closest to 1.5. 1.5 is the approximate mid-point of Brown's Stage 1; near the end of Stage 1 children often go through a period when they seem to acquire words rapidly so that there is often a jump in the size of a child's vocabulary at this point. It is also at this stage, as marked by an MLU of 1.5, that about half of the children's utterances are two-word utterances. Due to the 3-month interval between recordings, it was rare for a child to have an MLUS of exactly 1.5 on the last recording. Actual values ranged from 1.0 to 2.21 with a mean of 1.68. On the last occasion children ranged in age from 1 year 9 months to 3 years, with a mean of two years.

All child speech was first coded on the three consecutive occasions using the coding system described below. All child utterances were coded into categories of discourse, pragmatic function, focus of topic and imitation. In addition to the speech characteristic coding all words spoken by the children were

categorized into word categories based on the parts of speech.

Frequency scores for each of the categories just described were transformed into percentages based on the total number of utterances coded. Percentages were also computed for the word categories. This percentage was based on the total number of word types used by a child over the three occasions recorded.

To summarize, the final variables for analysis included the speech characteristics and the word categories, all in percentage form. In addition the occasion when the child's MLU was closest to 1.5 was included as a measurement of rate of development. Finally, the number of different words was included.

Grouping Procedures.

In order to test the research hypotheses it was necessary to group the children for certain of the statistical analyses employed.

T-Tests and ANOVAs group children on the basis of some independent variable. The Chi Square statistic uses nominal data and therefore it is necessary to transform the percentage data into nominal categories. Two methods of grouping the children are described below.

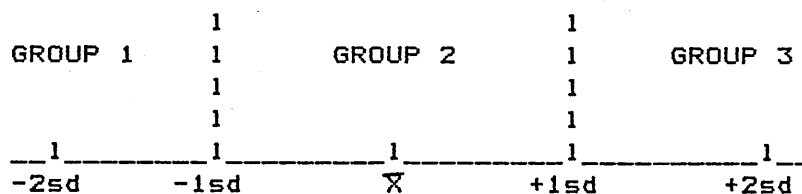
Grouping Procedure 'A'.

One method of grouping the children was so that oneway analysis of variances could be computed. To do this the variables to be used as independent variables were divided into three groups. The method used to group the children is based on statistics used with the Normal Curve. To describe how the procedure works it will perhaps

help to use an example. Intelligence, as measured by IQ, is normally distributed. It has a mean of 100 and a standard deviation (sd) of 16. That means that children whose IQ is between -1 sd and +1 sd have IQs that range from 84 to 116. 68% of the population fall within this group. The area between 1 sd and 2 sd accounts for another 27% of the population. The remaining 4% of the population fall above or below ± 2 sd. Grouping procedure 'A' is similar in that group 2 is composed of children who fall between 1 sd below and 1 sd above the mean on the independent variable. Groups 1 and 3 are composed of those children who fall in the 'tails'; group 1 being below -1 sd and group 3 being above +1 sd from the mean. Figure 1 shows a schematic representation of how the children were grouped. Obviously group 1 children had the lowest scores and group 3 children the highest scores on the variable used to form the groups. The majority of children would fall in the middle group: group 2.

Figure 1

Representation of Grouping Procedure 'A'



Grouping Procedure 'B'.

Grouping procedure 'B' was devised to form nominal groups so that Chi Square analyses could be performed. Each variable was divided into two groups with the mean being the divider. For all variables group 1 was composed of those children below the mean and group 2 those children above the mean. As with procedure 'A', all children

were included in this procedure.

Statistical Procedures.

Various statistical procedures were employed on the data.

Frequency distributions for all variables were calculated over the three occasions using the SPSS (Statistical Package for the Social Sciences) computer program (Nie, et al., 1979). Pearson product-moment correlations to test the degree of association among variables were also computed using the SPSS program. Neither of these procedures requires explanation; however it might be useful to explain in more detail some of the other procedures.

2 x 2 Chi Squares were performed on some variables to provide detailed information regarding cell composition. Grouping procedure 'B', dividing the sample into 2 groups, was used with these analyses. Some Chi Squares had significant results but on closer examination it appeared that the cells which provided most information regarding variation were very similar, which means that it was the 'uninteresting' cells which forced the Chi Square into significance.

Oneway analyses of variance were computed using the SPSS procedure. ANOVAs are used to test the degree of difference between or within groups. In each case, the independent variable was grouped according to procedure 'A' to form 3 groups of children. The ANOVA statistic provides information on difference between all the groups but it is not specific enough to show the degree of difference between the extreme groups.

T-test statistics helped to indicate whether significant ANOVA

results were due to difference between the two extreme groups. Two different T-test formulas were employed on the data. When the samples were of equal size a separate variance estimate of T was used. When the sample sizes were not equal the pooled variance estimate of T was used. All the T-tests were performed using a subset of the data. That is, groups 1 and 3 were analyzed which usually meant only ten to twelve children were included.

The final statistical method used was a cluster analysis.

Bretherton et al. (1983) have shown that it is possible to use cluster analysis techniques with language data. They used not only speech data but also included data collected from maternal interviews. The cluster analysis program used in this study is the P1M program of the BMDP computer package (Dixon and Brown, 1979). This program differs slightly from the analysis used in the Bretherton study; however, the principles are the same. Cluster analysis is a statistical technique which groups variables on the basis of either most similar or least different. The investigator can then examine variables to determine how they group into clusters. In the BMDP technique each variable is initially thought of as a single cluster. The single clusters are joined on the basis of a measure of similarity (in this case the product moment correlation coefficient). Clusters continue to be grouped in this manner until all variables form one cluster.

The speech characteristic and word category data were both entered into the cluster analysis.

Coding System

The coding systems are described below. One-word utterances do

not have a syntactic structure nor is it always possible to code them in terms of a semantic relation or grammatical part of speech. Therefore it was necessary to develop a coding system that would take into account the limitations of the data.

There are difficulties in collecting data using radiomicrophones. Whereas this method of data collection was extremely naturalistic because no observer needed to be present, the lack of an observer meant that there was no detailed information about ongoing activities. Speech that in context might have been clear, remains uninterpretable. While the playback sessions to parents, on the whole, provided much information, there were a few parents who were extremely unknowledgeable as to what had gone on during the day. At the same time it was almost impossible for parents to provide minute details of activities. Therefore, speech that was unintelligible or utterances that were only partially interpretable had to be excluded from study. Child utterances were coded in conjunction with the surrounding adult speech. If an adult responded to an utterance as if the child had asked a question then the utterance was treated as a question. If the adult responded as if the child had demanded something, then the utterance was treated as a command.

The first coding system describes the various codings made on the basis of the utterance. That is each utterance received codings for discourse, pragmatic function, focus of reference and imitation. A second coding system was designed to categorize the words in the child's vocabulary. Six word categories were formulated to account for all words used by children in this age range.

Coding system for one-word utterances.

DISCOURSE STATUS. To participate in a conversation one must have acquired some skills in maintaining social interaction. One such ability is that of turntaking. A child's turntaking skills are already quite well developed by the time he produces his first words (Trevvarthen, 1977). However, how much the child initiates conversational topics, and therefore acts as the leader in the conversation, may affect the language he uses. For this study utterances are coded as either initiates or responses. An utterance could implicitly be a response and an initiate but at the oneword stage it would be much too difficult to code reliably such a category, so these utterances will be treated as unknown. As will be the case with each coding category, an utterance is coded as unknown if there is insufficient evidence to place it any other category.

PRAGMATIC FUNCTION. Every utterance carries with it some degree of intent. Searle (1969) labelled this 'speech acts'. There is an indefinitely large number of speech acts and it would be impossible to code for more than a handful. For the purposes of this research four of a possible six Sub-sequence categories used in the original coding of the Bristol Language Development Project (Wells, 1973, 1975) were used. Sub-sequence is a way to code for pragmatic function by merging speech acts into a global classification.

1) Control is for those utterances when the child wants, demands, requests, offers, accepts or rejects goods or services or responds to similar utterances by others.

2) Expressives are used when the child is using endearments,

exclamations, politeness words ('please' 'thank you'), or adjectives with a qualitative element (i.e., 'pretty', 'nice').

3) Representation includes naming, classifying or describing objects and entities. It also includes descriptors of physical states (i.e., 'hot', 'tired'). It also includes asking or answering questions.

4) Procedurals are for the most part contingent queries, or utterances to repair a conversation breakdown.

5) A fifth category was added which could be thought of as a subset of the Control category. Vocatives are strictly those utterances which call another person to attend to the child or his activity. It was decided to make this a separate category because it was apparent that, at this stage, some children use vocatives almost exclusively while other children use them extremely rarely.

Two further categories of pragmatic function are included because they more closely replicate the category used by Nelson to describe expressive speech.

6) Nonrep1 is a combination of Control, Expressive and Vocatives. These three categories are added together to produce Nonrep1.

7) Nonrep2 combines only Control and Expressive. In Nelson's original analyses names are coded as specific nominals whereas her method of grouping the children is based on general nominals. Therefore, though the function of vocatives is included in expressive speech because it manipulates or controls others, it is likely that Nelson would not have included it in her general

nominal coding. Therefore, it is interesting to compare the two Ronrep categories to see what their relationships are with the other variables under examination.

FOCUS OF TOPIC. Nelson (1973) made a distinction between words which referred to objects, and those which referred to people or actions. The referential expressive dichotomy hinges on the degree a child is orientated towards people or towards objects. It is, therefore, an important distinction to replicate. As with Nelson there are three categories: objects, people, and actions.

REPETITION/IMITATION. A child who imitates much of the adult speech around him, whether it is addressed to him or not, may be using such utterances to practice speech. His language may be different from that of the child who rarely imitates. On the other hand, a child who often repeats himself, many times over, may have a different type of language from the child who repeats himself rarely. All children imitate and they all repeat themselves. But the proportions may differ to an extent which alters the speech style. Three categories are used here. Utterances which are an imitation of an adult utterance within the last 5 adult utterances are classified as imitations; utterances which are a direct repetition of the previous child's utterance are classified as repetitions; and utterances which are neither imitations or repetitions are classified as independent.

Coding System for Word Categories.

In addition to the coding system described above, each word type used by the child over the three occasions was coded into the parts of speech. For this coding system each different word was

categorized once. The total, therefore, is not the number of utterances produced but rather the total number of word types used.

Nouns cover all words within the adult grammatical category of nouns (excluding Proper nouns).

Names, are those words which are specific names for people, pets and special toys.

Pronouns, includes personal, demonstrative and interrogative pronouns.

Verbs are for those words which name actions as well as 'be', 'do' and 'have'

Adjectives and Adverbs are all words which act as modifiers to nouns or verbs.

Unstructured Items are words such as 'yes' 'please' and 'thank you'

Noun/Verb is for those words which can be either a noun or a verb such as 'drink' 'weewee'.

Summary

In this chapter the methods and procedures used to test the five research hypotheses have been described. The sample size of 32 children represents a very large sample in terms of the more usual sample of 3 to 4 children in child language research. A variety of standard statistical procedures that were employed on the data have

been described. These procedures include Pearson correlations, T-Tests, Oneway ANOVAs and Chi Squares. The Cluster analysis technique used on the data was described in some detail. Two coding systems, one to be used on utterances and one to be used on words in the vocabularies were described, hopefully in enough detail so that the methods can be replicated by others.

CHAPTER IV

Results

In this chapter results of the analyses will be presented. The descriptive statistics for the 32 children as a single group will be given first because they provide the basis from which further analyses are possible. Some analyses, for example the ANOVA statistic, require that variables be fairly normally distributed. Therefore, it is important to start by examining the distributions of the variables. The results of the analyses to test the research hypotheses will be discussed separately. A final section contains results which, while not specifically related to any of the research hypotheses, are relevant to the more general question of how children's language develops at the early stages.

Descriptive statistics.

As mentioned in the procedure section, all raw scores were transformed into percentages so that children could be compared. This was done to overcome the difficulty presented by children contributing different amounts of speech. Different procedures were used to compute percentages depending on the data. The speech characteristic percentages were based on the total number of utterances produced by the child over three occasions. Each utterance was coded for categories of discourse, pragmatic function, focus of reference and imitation. Therefore, percentages were based on the total number of utterances produced. The percentages for the word categories are based on the total number of different words used by the child.

On the last occasion sampled the children ranged in age from 21 months to 36 months with a mean age of 24 months. The total number of codeable single word utterances ranged from 12 to 199 over the three occasions combined. The mean for the group was 96.09. The number of different words produced by the children ranged from 5 words to 67 words ($\bar{X} = 26$). It should be recalled that only single word utterances were analysed in this investigation; therefore, all multi-word speech was excluded.

Frequency Statistics: speech characteristics.

There are two categories for discourse status. As can be seen in the table below, the category 'initiating utterances' has a mean of 63% (Range 37-93%) while that of 'responses' has 25%. The remainder were uncodable. The percentage data indicates that at this stage children are more apt to initiate conversation. This could be due to the fact that 50% of all utterances had a 'controlling' element in them (see below). In other words, utterances which demand or request goods, services or people's attention tend to be initiating.

	Range	Mean	Standard Dev.
Initiate	37% - 93%	63%	14%
Response	0 - 41%	25%	11%

Originally Pragmatic Functions were coded into four categories; however, it was decided that because vocatives for some children at this early stage are so prevalent it was appropriate to form a new category solely for this function. Nelson (1973) divided her children on the basis of whether they used a referential or an

expressive speech style (see Chapter II) on the basis of the general nominal category (see Chapter II). As an alternative to Nelson's method it was decided to create the referential/expressive distinction within the pragmatic function categories. The Representation function is most similar to the referential speech style and needs no modification. However, to create an appropriate measure of the expressive speech style it is necessary to combine the function categories of control, expressive and vocative. Therefore analyses trying to replicate her findings should be based on these three functions. Some children, however, use vocatives much more than other children so it was decided to try excluding vocatives from analyses. Consequently, two new variables were created. Nonrep1 was created by adding the percentages of control, expressive and vocative together for each child. Nonrep2 was created by adding the percentages for only Control and Expressive. The statistics for the final seven categories were as follows:

	Range	Mean	Standard Dev.
Control	7% - 63%	25%	13%
Expressive	0 - 23%	7%	5%
Representation	0 - 43%	20%	12%
Procedural	0 - 11%	2%	3%
Vocative	4% - 59%	25%	15%
Nonrep1	30% - 85%	57%	16%
Nonrep2	12% - 72%	32%	14%

As mentioned above, 50% of all utterances are either Controls or Vocatives. Within the Vocative category it is usually the child calling for mother's attention. The utterances in Control centered most around requests for food or action (such as, needing to go

'weewee'). Utterances with a Procedural function were very infrequent at this age. This is not surprising because to first realize that communication has broken down and then to try to repair it requires a shift from the self-centeredness of children who are two-years-old to an ability to see both sides of the interaction. Because Procedural utterances were so infrequent they are not included in further analyses.

Focus of topic is composed of three categories. As can be seen from the table below People and Things were similar in their frequency percentage figures.

	Range	Mean	Standard Dev.
People	9% - 71%	34%	17%
Things	0 - 73%	39%	17%
Actions	0 - 30%	12%	9%

It is not surprising that much talk is about Things. However, when Things is compared with the pragmatic functions (see above) it is clear that some of this talk must be to gain possession or to get rid of an object. This becomes obvious when the statistics of Things is compared with Representation.

6% was the mean of child speech occurring as an imitation of adult speech. 26% was the mean of child utterances that were repetitions of his or her previous utterance. This would include those occasions when a child repeats a word (such as, 'Mummy') over and over again. Independent utterances were the most prevalent (Mean = 68%). Again the range of each category among children is high.

	Range	Mean	Standard Dev.
Independent	43% - 85%	68%	9%
Self-Repetitions	11% - 55%	26%	11%
Imitations	0 - 18%	6%	5%

Frequency statistics: word categories.

The six word categories, described in Chapter III, were also analyzed in percentage form. The method for computing percentages was discussed above. A seventh category, that of the actual number of different word types used by the child, is also included.

The frequency statistics for the six grammatical categories are presented in the table below. Nouns were the most prevalent type of words in a child's vocabulary. However, there were three children who, by the end of the study, still had no nouns in their vocabularies.

Frequency Statistics of Grammatical Items

	Range	Mean	Standard Dev.
Nouns	0 - 61%	27%	15%
Names	6 - 30%	16%	6%
Adjectives & Adverbs	0 - 32%	16%	8%
Pronouns	0 - 27%	7%	7%
Noun/verbs	0 - 14%	4%	4%
Unstructured Items	7 - 40%	20%	8%

All children had the word 'Mummy' in their vocabularies and most

had 'Daddy'. Most of the other names were for grandparents and siblings. At this age it appeared that the number of names a child used was directly related to the number of different people he saw on a regular basis. In fact, over the three recordings, it was extremely rare for an individual to be named without that person putting in an appearance. Pronouns, at this stage, is a very interesting category because eight children did not use any pronouns at all. The most commonly used pronouns were 'me' (14 children), 'that' (9 children), 'mine' (6 children) and 'what' (5 children). It should be remembered that Pronouns included personal, possessive, demonstrative and interrogative pronouns.

Results and the Research Hypotheses.

The results of the analyses for each research hypothesis will be discussed separately. There were five research questions which evolved from the studies of language variation: 1) Some children show a preference for nouns while other children show a preference for pronouns; 2) Some children show a preference for referential speech other children for expressive speech; 3) Representational utterances tend to occur as responses; 4) 'Things' are talked about predominantly in Representational speech and 'people' are either talked to or talked about in Expressive speech. These four questions will provide some of the evidence for the fifth research hypothesis: that there are two language learning styles which contain the elements listed above.

Hypothesis One: Some Children Show a Preference for Nouns While Other Children Show a Preference for Pronouns.

The results of the Bloom et al. (1975) study suggested that some

children rely on nouns while other children rely on pronouns to formulate utterances at the beginning of the two-word stage of language development. For the present study we wanted to know if this distinction existed at the one-word stage of development. Each different word spoken by the child (dog, cat, mommy, work) was coded as to whether it was a noun, pronoun, name, adjective or adverb, verb, unstructured or a word that could be either a noun or a verb. To test for possible noun/pronoun differences only those two categories were analysed.

In this study we did find that children differed in the percentage of nouns versus pronouns in their vocabularies. A Pearson correlation between nouns and pronouns was negative and significant ($r = -.55$, $p < .001$). This indicates that children high on one variable are low on the other. In other words if a child used a high proportion of nouns in his speech he tended to use very few pronouns, and vice versa.

Two tests of difference were performed. A Oneway ANOVA was computed using the variable noun as the grouping variable. In this case groups were formed using grouping procedure A (described in Chapter III) which divided the children into three groups on the basis of children's scores in relation to the mean and standard deviation. There were five children each in groups 1 and 3, leaving 22 children in group 2. The ANOVA resulted in an $F = 11.26$ ($p < .001$; 2df). The ANOVA shows that that there is a significant difference but it does not tell us whether the difference is significant between the two tail groups who represent the highest and lowest noun users. Therefore a T-Test was performed between groups 1 and 3 to check for a difference between these groups. The procedure used here was the separate variance estimate (discussed

earlier). $T = 3.05$, $p < .05$ (4.5 df).

The tests of difference show that children in this study have different numbers of nouns and pronouns in their speech and that children who use many nouns use few pronouns and children who use many pronouns use few nouns. These analyses lend support to the finding of Bloom et al., and are important because in the Bloom study there were only four children while here there are thirty-two. Further, the Bloom results followed sex lines, though the authors did not suggest that this language difference is sex-related. In this study groups 1 and 3 were each composed of three boys and two girls; group 2 was composed of ten boys and twelve girls. One can conclude that noun/pronoun differences are not related to sex differences.

Hypothesis Two: Some Children Use Referential Speech While Other Children Use Expressive Speech.

Nelson (1973) discussed two different language learning strategies based initially on the number of general nominals in each child's vocabulary. In this study it is not possible to replicate the word categories that Nelson used, so we have tested her hypothesis in a different way. In her study, Nelson categorized words partly on the functional force a word had. Therefore, in this study, the categories of pragmatic function should capture both referential and expressive speech. The actual method for coding utterances into pragmatic categories was discussed in Chapter III.

For the purpose of replicating Nelson's findings it was necessary to combine the functions which are subsumed under her definition of expressive speech. (The function Representation is already similar

to Nelson's definition of Referential speech, so no modifications need to be made.) So for the following analyses two new variables, Nonrep1 and Nonrep2 (Nonrep = non-representational) were created by adding together pragmatic categories. Nonrep1 was composed of Control, Expressive and Vocative. Nonrep2 was composed of only Control and Expressive. The explanation for using both Nonrep categories was described in Chapter III. The results of the analyses using each Nonrep category will be described separately.

Analyses with Nonrep1 (Control+Expressive+Vocative).

As a first indication of similarity or difference a Pearson correlation was computed between Representation and Nonrep1. In this instance $r = -.69$ ($p < .001$). This suggests that children tend either to use Representation or Nonrep1, but that children do not use both categories equally.

A Chi Square was performed using grouping procedure 'B' which dichotomizes the total sample on the basis of the group mean (see Chapter III). This resulted in a $\chi^2 = 7.9$ ($p < .01$). Closer examination revealed that most children fell into two cells: the +Representation -Nonrep1, or +Nonrep1 -Representation. Only seven children fell into the remaining cells. Therefore, further tests of difference were necessary to discover if these two groups were significantly different.

First a Oneway ANOVA using grouping procedure 'A' was performed with Nonrep1 as the grouping variable. Group 1 had seven children in it, group 2 nineteen children and group 3 six children. Significant differences resulted from this analysis ($F = 8.32$, $p < .01$; 2 df) which lends support to the hypothesis that children

use either referential or expressive speech.

Finally, a T-test between the high and low groups (groups 1 and 3) on Representation produced significant results. The pooled variance estimate of T was used here (see Chapter III). $T = 3.43$ ($p < .01$). This shows that the speech used by children in groups 1 and 3 is significantly different.

It is clear from these results that if children are grouped on the basis of their use of the pragmatic functions Control, Expressive and Vocative the result is a significant difference in the use of Representational speech as produced by the children in this sample and the difference is similar to the referential and expressive speech styles described by Nelson.

Analyses with Nonrep2 (Control+Expressive).

Some of the analyses with Nonrep1 were duplicated with Nonrep2. However, the results were very different. First, the Pearson correlation while still negative in direction was non-significant ($r = -.12$, ns). This implies that by excluding Vocatives we have lost the element of difference.

Procedure 'A' was used on Nonrep2 to produce three groups of children. This resulted in Group 1 having 5 children, group 2 having 23 children and group 3 only 4 children. The Oneway ANOVA with representation was non-significant ($F = 1.03$, ns); the T-test between groups 1 and 3 was also non-significant ($T = -.04$, ns).

It is clear that excluding Vocatives from the Nonrep2 category reduces the statistical results to non-significance whereas the

Nonrep1 category which includes an element (Vocatives), which was not included in Nelson's general nominal category, replicates her referential.expressive distinction. What does this mean when one examines the results of the Nelson study? First of all it must be remembered that Nelson only analyzed the first fifty words in a child's vocabulary. That means that a word was only categorized on the basis of its first use. In this study all utterances were analyzed so that words were coded as many times as they were produced. One assumes that because the Nonrep1 category produces results similar to the results produced by Nelson that Nonrep1 does capture her expressive speech style. One must also assume that the difference between her results and the results presented here are due to differences in data collection: the different procedures for coding utterances, as mentioned above; and the slightly different age group of the children involved (Nelson's sample were between 10-15 months at the start of the study, whereas children in the present study were between 15-27 months).

Hypothesis Three: 'Things' are Talked about in Representational Speech and 'People' are Talked about in Expressive Speech.

Again we turn to the Nelson study for an explanation of this hypothesis. She found, in her sample, that there was an association between a referential style of speech and object names. Therefore, one would expect that the Representational function would be used to talk about the object world and Non-representational speech would be used to talk to or to talk about people. To test this hypothesis correlations were carried out between Representation, the Focus of Reference category Things and the word category, Nouns. A second series of correlations between Nonrep1, the Focus of Reference category of People and the word

category Names were carried out to test the second part of the hypothesis.

Analyses Between Representation and Things.

We begin by examining the associations between Representation and the Focus of Reference category Things. We find that Representation and Things are positively correlated ($r = .42$, $p < .05$). This correlation provides initial support for the hypothesis that Things are talked about in Representational speech.

Further correlations indicate that Representation is associated with number of nouns in a child's vocabulary ($r = .48$, $p < .01$) and Things are also associated with number of nouns ($r = .57$, $p < .001$).

Converse evidence for the hypothesis is given by the correlations involving Representation, People and Names. Here we find that Representation is negatively correlated with People ($r = -.50$, $p < .01$). It is also negatively correlated with Names ($r = -.39$, $p < .05$).

Taken together these correlations show that Things, Representation and Nouns are all significantly associated. So the first part of the hypothesis is supported. We have also shown that Representation is not associated with talk about People or with Names.

Analyses with Nonrepl.

For this part of the hypothesis we want to know if an expressive

type of speech is associated with talk to people. We also want to know if this is associated with the number of names a child uses. It will be recalled that Nonrep1 includes vocatives while Nonrep2 does not. It will also be recalled that the analyses with Nonrep1 replicated the findings made by Nelson. The findings on Nonrep2 did not. Therefore, for these analyses only Nonrep1, which encompasses the spirit of expressive speech, will be analyzed here.

A series of correlations were computed to test the hypothesis. The results are presented in the table below. It can be seen that Nonrep1 was highly correlated with People but Nonrep1 was not significantly correlated with the number of Names. People and Names are highly correlated.

Correlations to Test Hypothesis 4, Part 2.

Nonrep1	1.00		
People	.62**	1.00	
Names	.28	.51**	1.00

Note: ** = $p < .01$

The correlations between Nonrep1, Things and Nouns while in the right direction (negative) do not reach significance. Nonrep1 and Things had a correlation of $-.27$ (ns) and Nonrep1 and Nouns had a correlation of $-.29$ (ns).

For these analyses we have only partial support for the hypothesis which stated that Nonrep1 would be associated with People and these utterances would be associated with the number of Names in a child's vocabulary. It is surprising given that Names and People are significantly associated to find that Names are not associated

with Nonrep1. However, the reason for this becomes clear if one considers the role of the individual variables that compose Nonrep1. Neither the Control nor Expressive categories are correlated with Names. In fact, both correlations are negative ($r_s = -.09$ and $-.11$, respectively). It is only the Vocative category which is significantly associated with Names ($r = .39$, $p < .05$) and it is not significant enough to force the correlation between Nonrep1 and Names into significance. In addition, Names is the number of different names in a child's vocabulary; Vocatives were most often produced when the child was calling for attention or help. Since this call was usually to 'Mummy' it would have only counted once as a Name but many times as a Vocative.

It was also expected that Nonrep1 would be significantly and negatively associated with Things and Nouns. The fact that the correlations, although negative, are not significant suggests that, for this sample of children, Things are talked about in 'Expressive' speech and that Nouns are used to form those utterances.

The hypothesis as a whole has only received partial support. We found that Representation is associated with Things and with Nouns and that Nonrep1 is associated with People.

Hypothesis Four: Representational Utterances Occur as Responses.

It was proved in hypothesis three that referential speech is used to talk about things; therefore such speech might be more apt to occur in situations when the child is responding to adult's question. To test this hypothesis correlations between the discourse categories and Representation were carried out first.

The percentage of utterances used as responses was positively correlated with utterances which were Representational ($r = .53$, $p < .01$). Due to the fact that Initiating plus Response utterances totaled 100% it is not at all surprising that Initiating utterances were negatively correlated with Representation ($r = -.52$, $p < .01$). However, these results do suggest that Representational utterances tend to be used as Responses rather than Initiates (i.e., talk with a representational function tends to be initiated by other speakers, most likely an adult).

A Oneway ANOVA using grouping procedure 'A' was performed with Representation as the independent variable. Six children were in group 1, twenty-one children in group 2 and five children in group 3. The ANOVA with the variable Response was significant ($F = 6.62$, $p < .01$). This result provides further evidence that utterances with a representational function are produced as responses.

A further analysis, that of a T-test, between groups 1 and 3 suggests that the children who use representation most also produce the most responses. Using the pooled variance estimate of T, $T = -2.65$ ($p < .05$). Conversely, children who are least likely to use representation produce the most utterances which are initiating conversation ($T = 2.99$, $p < .05$).

These analyses then confirm that representational utterances occur as responses. Further, analyses with Nonrep1, which we already know is used differently by different children provides support for the reverse hypothesis that Nonrep utterances occur as initiates. A Pearson correlation between Nonrep1 and Initiates was positive ($r = .57$, $p < .001$) and negative with responses ($r = -.44$, $p < .05$).

.05).

Hypothesis Five: Components of Referential and Expressive Speech Styles can be Identified.

This hypothesis is to test whether hypotheses 1 through 4 go together. That is can children be divided into groups on the basis of the speech characteristics and word categories: the speech of one group would be composed predominantly of Representational utterances, Responses, Things and Nouns; the speech of another group would be predominantly composed of Nonrepl, Initiates, People, Names and Pronouns; and a third group of children whose speech would not show this pattern of differentiation.

To test this hypothesis we need to re-examine some of the evidence for hypotheses 1 through 4 and then analyze the data in a way which utilizes all the information at one time. It was shown in the previous hypotheses that 1) some children show a preference for nouns and other children a preference for pronouns; 2) some children use referential speech and other children use expressive speech; 3) 'things' are talked about in Representational speech and 'people' are talked to or about in Expressive speech; and 4) Representational utterances occur as responses. Each hypothesis, then, has contributed an isolated aspect by which children differ. To test whether these different aspects form groups several statistical techniques were used.

Cluster Analysis.

A cluster analysis, using the technique described in Chapter III, was performed using all the percentage variables. That is the

speech characteristics and the word categories provided the input data for this program.

It will be recalled that initially each variable is treated as a single cluster. Clusters are then grouped with other clusters on the basis of how similar they are. The clusters are continually grouped until there is only one cluster which includes all the variables. It is always possible to identify clusters. Whether or not they have any meaning is another matter.

The results of the cluster analysis on the present data provided no clue as to how variables could be grouped. The most significantly formed clusters came from variables within the same category. For example, a cluster was formed by Initiates and Responses (with a degree of similarity of 80.5); another cluster was formed by Nouns and Unstructured items from the word categories (degree of similarity was 76.5). Neither of these clusters are useful as they are composed of percentage variables based on the same total, i.e., Initiates and Responses are both discourse categories and Nouns and Unstructured items are both word categories.

The sole cluster which appears significant and valid is that of Vocative and People (degree of similarity is 92.2). However, this cluster brings to light one of the limitations of the coding system used in this study. Vocatives are calls for attention and are usually addressed to a named person. It is not at all surprising, therefore, that Vocatives and People group together.

Unlike the Bretherton et al. results the data here did not produce indications that language characteristics form clusters of language

'styles' which differ from each other. At this point, then, we do not have evidence to support the hypothesis. However, there are other methods of testing the hypothesis.

The first part of the hypothesis predicts that Representation, Things and Nouns are used by the same children. We know from the results reported for hypothesis 4 that they are all significantly associated with each other. However, we do not know whether the same children are high or low users of each characteristic. One way to explore this is to look at which children fall into groups 1 and 3 when grouping procedure 'A' is used.

Each of the three variables, Representation, Things and Nouns was subjected to Procedure 'A'. The children in groups 1 and 3 for each variable are listed below.

Representation		Things		Nouns	
Group 1	Group 3	Group 1	Group 3	Group 1	Group 3
Darren	Gerald	Martin	Jonathan	Martin	Gerald
Sean	Benjamin	Darren	Lee	Darren	Benjamin
Abigail	Neville	Nancy	Gary	Sean	Jonathan
Sheila	Martin	Rosie	Gavin	Frances	Betty
Laura	Jonathan		Iris	Rosie	Samantha
Rosie			Olivia		
			Abigail		
			Betty		
			Harriet		
			Samantha		

From the table it can be seen that one child, Jonathan, falls into the highest group on all three variables. Two children, Darren and Rosie are in the lowest group on all three variables. When Representation and Nouns are grouped three children fall into both groups 1 and 3; there are also three children in each group when Things and Nouns are grouped. The fact that there are only 32 children in this sample would suggest that these children do, in fact, use referential speech in a fairly systematic way.

The same procedure was carried out on the three variables that make up expressive speech. Names has not been included because the learning of people's names is probably more related to the number of extended family members than to the child's willingness or ability to master them. Pronouns, which was shown in Hypothesis 1 to be opposed to Nouns was included instead. The variables included then, are Nonrep1, People and Pronouns. The children in groups 1 and 3 for each variable are listed below.

Nonrep1		People		Pronouns	
Group 1	Group 3	Group 1	Group 3	Group 1	Group 3
Gerald	Anthony	Gerald	Anthony	Geoffrey	Martin
Jonathan	Darren	Benjamin	Darren	Benjamin	Darren
Neville	Abigail	Martin	Elspeth	Anthony	Sean
Jason	Sheila	Jonathan	Laura	Lee	Frances
Simon	Laura	Lee	Rosie	Simon	
Sean	Rosie	Jason	Ellen	Jack	
Olivia		Gary		Betty	
		Sean		Rosie	
		Abigail			
		Stella			

When these variables are grouped together there are no children who appear in group 1 and only Darren appears in group 3. It appears, then, that the expressive variables do not group by children as strongly as they group on the referential variables. This suggests that an expressive style of speech may have other components than those investigated in this and previous studies.

Children do differ in the language they use. The sample under investigation proves that. But the difference between children's language performance is on the basis of single variables. When this data was analyzed using multivariate techniques, the cluster analysis, the variables did not form clusters indicative of patterns of language use. However, when the children who are the highest and lowest users of the components of both referential and

expressive speech are identified, there is some indication that children differ in their language use in a systematic way.

Results not Related to Hypotheses.

Nelson and Ramer both suggested that speech style was related to rate of development. Ramer's groups were formed on the basis of fast or slow acquisition of the S-V-C construction. A measure of rate of development, in this study, is the occasion when a child reached the criterion of an MLUS of 1.5. As noted earlier, children varied considerably in when their language reached this stage. Correlations between rate of development and any of the specifically coded categories were non-significant. This was surprising especially in consideration of the literature. In Nelson's sample there was an association between rate of development and membership in her referential speech style. In this sample, rate of development and Representation produced a negative correlation ($r = -.08$, ns). The range of vocabulary used is related to Representation ($r = .48$, $p < .01$). This is in keeping with Nelson's finding that referential speakers have a larger vocabulary than expressive speakers.

A result that is less easy to interpret is that the size of a child's vocabulary has a positive association with rate of development ($r = .40$, $p < .05$). It must be assumed that something, besides the learning of nouns, is taking place which affects both vocabulary size and rate.

An area of the coding system which was not included in any of the hypotheses is that involving Imitation. However, some analyses were carried out to explore the relationship between a child's

imitative language behavior and the other speech characteristics.

First, correlational analyses revealed that Imitation was significantly associated with the number of nouns in a child's vocabulary ($r = .48$, $p < .01$). The direction of the correlation implies that the greater the imitation the more nouns used by a child. Second, there was a significant correlation between Imitation and Representation ($r = .43$, $p = .014$).

These two correlations then suggest that children who are high users of the representative function are high imitators. This could be due to how imitations occur. They tend to occur as responses to adult's representational initiations: the adult utterance names an object and the child replies by imitating the object's name. Further, these children have many more nouns in their vocabularies, than other children in the sample.

An ANOVA using Representation as the independent variable produced non-significant results with Imitation ($F = 3.13$, $p = .058$). A T-test between groups 1 and 3 (6 and 5 children respectively) just reached significance ($T = -2.26$, $p \leq .050$). These tests of difference indicate that the highest and lowest representative speakers differ significantly in their use of imitation.

Summary.

In this chapter the results from the present investigation of children's language were presented. Five hypotheses were tested. First, that some children show a preference for nouns and other children a preference for pronouns. In the present sample it was shown that the more nouns a child used the fewer the pronouns and

the more pronouns a child used the fewer the nouns. Second, that some children predominantly use a referential speech and other children predominantly use expressive speech. Here it was proven that there is a significant difference in the amount of representational speech produced by the highest and lowest speakers of expressive speech. Third, that Things occur as the focus of reference in representational utterances and that People occur as the focus of reference in expressive utterances. This hypothesis was only partially supported. The analyses supported the notion that in representational utterances the focus of topic is the object world using nouns to formulate utterances. However, though we found that expressive speech (as measured by Nonrep1) was significantly associated with People, Names was not associated with Nonrep1. Fourth, the hypothesis that representational speech occurs as response was tested and proven with the present set of data. Correlations between Representation and Responses were positive and significant. Correlations between Nonrep1 and Responses were negative and significant.

The fifth hypothesis tested the possible existence of two types of language: that of referential language composed of Representation, Responses, Things and Nouns; and expressive language composed of Nonrep1, Initiates, People, Names and Pronouns. A cluster analysis did not produce any clusters that could not be explained by the limitations of the coding system. Correlational information had already suggested that the hypothesis was correct. While some children provide confirmation of the hypothesis, the majority of children cannot be differentiated in this way.

In the last chapter the results were presented of analyses to test five hypotheses about language variation in children from the ages of 15 months to 36 months. These results were discussed in terms of whether or not each hypothesis was supported and how each result compared with results from other studies of language variation in young children. In this chapter the results will be discussed in terms of the more global issue of language acquisition.

Discussion of the Five Hypotheses.

In the previous chapter the results were discussed only in terms of whether they provided support for each specific hypothesis. It will be recalled that it was shown that the children in this sample do differ in the number of nouns and pronouns they used when their MLUS were between 1.0 and 1.5. It was also shown that some children show a preference for referential speech and other children for expressive speech. In relation to the third hypothesis it was shown that children who use representational utterances tend to do so in response to speech by others. Finally, it was shown that there is a tendency for the focus of topic of representational utterances to be Things and for the focus of topic of expressive utterances to be People. The one hypothesis that was not clearly supported was that the language features form clusters around referential and expressive types of speech.

Together, these results suggest that children do use language in different ways. However, various questions are left unanswered by this research. For example, what are the implications of there being such differences in children's one-word speech? If we find

that children show a preference for different elements (nouns or pronouns, for example) is this enough evidence to talk about language variation? In other words: If we find that the productive language of young children differs, does this indicate that it is their command of language which is different or are there other ways of accounting for the difference? There are several approaches to this question and some of these are discussed below.

Meaningfulness of Variation Without Regard to the Sources.

In Chapter I various sources of variation were discussed. At that point the issue was not discussed as to whether variation in children's early language could be considered meaningful if these socio-linguistic sources of variation were not taken into account. But at this point we have seen that a number of investigations, the present one included, have explored language variation and have not taken many, if any, of these sources into account. Many of these studies have however tried to consider sex differences.

Differences between children could be related to a number of factors, for example, sex, social class and position in the family. Nelson attempted to relate her findings to two of these factors (sex and position in the family). Her results suggested that first born and only children tended to be referential speakers while children with older siblings tended to be expressive speakers. She found that, as a group, the girls in her sample acquired a fifty word vocabulary earlier than the boys. Ramer also related her findings to sex: the seven children divided into two groups by sex. Other than that, there were no reported differences related to social factors in the studies discussed in Chapter II.

This is due mostly to the fact that researchers partialled out obvious areas of differences; that is, only children of middle class parents were used as subjects in many of the studies reported in Chapter II. For other areas of possible difference researchers did not explore the effects.

Surely, studies of language variation should consider all of the possible non-linguistic sources of variation or they should limit their investigations to groups of individuals matched on all the possible non-linguistic sources.

One area that received some discussion in Chapter II was the role of situational context. Many studies, including the present, did not examine language in terms of the situation. However, it is probable that different children are exposed to different situations for differing amounts of time. For example, children who are left to play in a room with a television on may use different language from children who are read to or who 'help' mother clean the house. It has been suggested that some of the language variation found between children can be accounted for by the situational context (Lieven, 1978; Nelson, 1981). It would be important, then, for any further investigation of language variation to take situational context into account.

Evidence for Language Learning 'Styles'.

Two studies reviewed in Chapter II talk about variation in children's language in terms of differences in the way children learn language. Nelson goes so far as to discuss language learning strategies. Bloom, et al. link variation in form with variation in the functional use the children make of language. On the evidence

presented, is it actually possible to talk about differences in language performance as reflections of different underlying processes or different learning strategies?

There is evidence that children differ along some dimensions of language use. These have been discussed throughout this report. These differences are based on measures of productive language. That is, children spoke and it is the spoken utterances which were coded and eventually counted. Are these utterances, spoken by young children, reflections of an underlying process?

To develop language a variety of things within the child must have taken place or be taking place. For example, in order to develop language a child must have reached a certain level of physical maturation. Language is centered in the left hemisphere of the brain and until this hemisphere has reached a certain level of development, language is not possible. One must be able physically to manipulate the vocal chords, throat and mouth to form words. Also, to use language one must obviously have memory skills of recall and recognition; one also needs to be able to store new material and modify old material. Since it has been well documented that children develop physically at different rates it is only common sense that any physically-related activity will be affected and therefore this is a partial explanation of why children show such remarkable differences in the age when they first speak and their rate of language development. However, there may be other factors which affect language acquisition.

As has been stated before, language does not occur in a vacuum. It may be treated in terms of cognitive skills by developmental psychologists but it also takes place in social situations. It has

connections with almost all areas of the psyche. To discuss the acquisition of language one needs to look at the complete individual. In this respect, the research by Brazelton and his colleagues concerning active and quiet babies is relevant to the study of the process of language acquisition.

Brazelton (1972, 1974) has described the newborn in terms of how quiet or active he or she is. In his research he has described the personalities and behavior of infants and toddlers up to the age of three as being quiet, normal or active. Active children differ from quiet children along a number of dimensions: they have more energy, they show greater curiosity about their surroundings, they explore more, they are more vocal; the quiet baby is content to remain in one position, does not seem terribly interested in what goes on around him, rarely cries and seems surprised at vocalizations. Again, common sense would dictate that personality differences between children would partially account for language differences. As yet no researcher has taken the personality of the child into account when exploring his language.

It has been suggested here that certain aspects of the child that could affect the language acquisition process have not been taken into account in any research project. There are some historical reasons for this. Psychology and children are divided into areas. One studies, for example, Social Psychology, Developmental Psychology, Cognitive Psychology and Clinical Psychology. Historically, there has been little overlap from one area into another. Further, the different schools have dictated which area of the individual to focus on. Within Developmental Psychology language acquisition was viewed either in the Piagetian sense as a symbolic representation of the child's cognitive representation or

in Skinner's behavioral sense as a learned behavior. There was little disagreement that language was encompassed as a cognitive function but the Piagetian school so downplayed language that it did not seem an area important enough to study. Vygotsky, with his extremely common sense approach to the topic treated language acquisition as a more social activity than cognitive.

Together, the effects of the division of psychology into small distinct units and the influence of a few individuals has meant that language acquisition has not been explored using all the relevant information. To use an analogy: One would expect a medical doctor to look at every symptom before arriving at a diagnosis. The same should surely be expected of researchers exploring the acquisition of language.

Methods of Research in Variation Studies.

Studies of language variation differ in the research methods employed. The question to be addressed here is whether the methods used are adequate for the task.

As all of these studies are concerned with language development, it is interesting that so many different ways to obtain children's speech exist. Most of the studies fall somewhere between the extremes of laboratory tasks and naturalistic home observations. Bloom et al. and Ramer used speech data collected in naturalistic play sessions. In both instances an observer was present; in the Bloom study the observer took part in interactions with the children. Nelson used mothers' diary reports and play sessions; Bretherton et al. used mothers' diaries, play sessions, and laboratory tasks. The present study was naturalistic without an

observer present during the period of data collection.

One thing that stands out from the studies is the number relying on speech data collected in play sessions. Play sessions, while possibly rich in the amount of child speech produced, are likely to give rise to under-estimates of the full range of the linguistic competence of the young child. That is to say:

"in many homes, much of the child's conversation with adults arises out of routine events such as meal times, dressing and toileting, or when the child becomes involved in adult activities such as cleaning, cooking, or from spontaneously occurring events of mutual interest."

(Barnes, et al., 1983, p. 67)

Further, it is rare for parents to spend an uninterrupted period of time playing with a child. In the Bristol data there were some parents who rarely if ever played with their children, while in other families play was fairly regular. Therefore, studies which concentrate on children's language in play situations do not have evidence for language variation outside the play situation and this language studied may, therefore, not be typical of the full range of language spoken by the child.

Language gathered in laboratories may also be atypical of the natural language used by children. Laboratory conditions may affect the participants in ways that are unmeasurable and therefore the language produced may not be the usual type. Some individuals, parents as well as children, may feel uncomfortable, and therefore be more inhibited than usual. Others may be stimulated by such experiences and produce more speech than usual. In either case,

the laboratory situation is artificial as compared with the home situation; therefore the language produced may not reflect the full language abilities of the participants.

Diary reports or mothers' notes on their children's language undoubtedly provide the researcher with detailed information concerning the use of first words. It is doubtful, however, whether mothers could continue to remain accurate as their children's vocabulary increased rapidly. Although both the Nelson and Bretherton studies augmented mothers' reports with recorded sessions, this was during the time when children's vocabularies were increasing slowly.

On the face of it, then, we have studies which have collected data in a variety of ways. It is questionable whether data collected in a laboratory provides an accurate account of children's natural language. It is also questionable whether language collected in play sessions provides a full and accurate account of young children's language abilities.

One is left then with data collected in a naturalistic home situation. This too has been criticized as an inadequate method because there is no built in control for physical setting, number of participants and type of activity. The counter argument is that it is just these sorts of variables which need to be taken into account if researchers are to be in a position to discuss variation between children and between children's language environment.

Studies of language variation wish to show whether children differ in the way they use language and if these differences indicate that they are using different processes to acquire language. To carry

out such research, research grants are applied for and received, data is collected, analyzed and reports are written.

Unfortunately, it is extremely expensive and time-consuming to examine more than a few children. Therefore, most language studies have very few subjects. However, if the goal of the research is to explore language variation, then commonsense dictates that there be a large sample of children; a sample large enough to produce meaningful statistical results.

Suggestions for Further Research.

The study presented in this thesis has confirmed language differences in a group of thirty-two children similar to the differences reported in the literature. This is an important study because the previous studies have all been based on American children, while the present study is about English children. In previous studies the children have all come from middle or upper-middle class homes, while the children in the present study come from a broad range of social class backgrounds. Finally, the previous studies have had small samples participating in the research; the present study has the largest sample to date.

There are deficiencies in the present study, however, some of which have existed in previous research as well. First, in any study of variation the role of situational context must be taken into account. If, for example, some children are never read to, then the amount of representational speech would automatically be less than for children who are read to (see Horgan, 1981). It is possible that this might lead to different processes of language acquisition. Second, sociolinguistic factors should be treated as variables. This means that measures such as sex, social class and

position in the family should each be included in all analyses. Only in this way can variation be explored. Third, the sample of children must be large enough for statistical techniques to be used. The child needs to be viewed in total so that researchers can properly evaluate the extent of variation in language, the non-linguistic variables (such as sex, social class and position in the family) as well as physical maturation and personality. These should be partialled out singly and together. This type of analysis requires a large sample so that the cells, when three or more variables are partialled out, are large enough for statistical work to be carried out. For three variables to be considered would therefore require a minimum of 64 children. Thus far, no study of that magnitude has been carried out.

The present study was limited to the analysis of single-word speech. This is its major limitation. It has been shown that analyses of one-word speech do suggest that children differ in the way they use language. However, the different uses children make of multi-word speech cannot be forgotten. It is likely that many one-word utterances were replaced by multi-word utterances and therefore the amount of speech in any functional category has been underestimated in this study. Further, until such time as both the single- and multi-word utterances are analysed in a single study a more complete picture of young children's language variation is unknown.

Summary

The question as to whether studies of language variation are meaningful in the way they are currently accomplished has been considered by focusing on three issues: the underlying

sociolinguistic factors responsible for differences in language use; the underlying processes of language development; and the research methods available to such investigations. It was concluded that studies of variation are deficient because they have not taken into account all the potential non-linguistic sources of variation. These studies must be viewed as pilot investigations because, though they have focused much attention on the areas where differences might lie, they have not taken all aspects of variation into account with a large enough sample of children.

To be in a position to discuss adequately variation in young children's language, several issues need to be addressed. The most important issue is to determine whether a difference that appears between children is a language difference or whether there is some other way for accounting for that difference.

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